MAY, 1914
25 Cents $2.00 a Year

Publication Office
87 Nassau St., New York

The American City

THE DEPTH AND HEIGHT OF NEW YORK'S CATSKILL WATER SUPPLY

To secure a plentiful supply of water; to keep it pure or make it pure; and to get the water into the city and to the top floors of the tall buildings—are among the most important problems of the municipal engineer and the city planner

Iroquois Semi-Portable Bituminous Mixing Plant

for Municipalities and Contractors

Ask for booklet—"A Real Plant"—containing blueprint description.

Tandem and Macadam Rollers, all sizes; Mixing Plants, Heating Kettles (50-400 gals.), Pouring Pots—Everything used in street and road construction.

SEND FOR CATALOGUES

THE BARBER ASPHALT PAVING CO.

IROQUOIS WORKS **BUFFALO, NEW YORK**

VOLUME X
NUMBER 5

The American City

NEW YORK
MAY, 1914

The Children Must Have Room

Rational recreation is an essential to healthful citizenship.

That the city may grow sanely, the children must grow safely.

We merely play at planning unless we plan for play.

Is there any provision for the youngsters in *your* city plan?

Drawn by Clifford Knight of the Hartford Post for THE AMERICAN CITY

THE KIDS: That's a fine plan, Mister, but where are the playgrounds?

Relative Values in Sanitation

Professor Whipple's article, "How to Determine Relative Values in Sanitation," in this issue of THE AMERICAN CITY, directs attention to a feature of public health work heretofore too little considered by health officers. No city is at the present time giving to its inhabitants the full measure of protection of life and health which it lies in the power of modern science to bestow. This being true, every health officer should carefully consider the direction which new work can most advantageously follow.

In a general way, any work which gives practical application to well-established principles of sanitary science will produce ultimate benefits far exceeding its cost. But much desirable work must wait, for lack of present funds. Hence, as indicated in the title of Mr. Whipple's article, it is *relative* value which must always be considered. To reduce this value to terms of dollars and cents is by no means possible in every instance, since this would require a knowledge of what would have happened had a given measure not been put into effect. This, of course, can never be accurately determined. All that we can do is to compare a period of years before and after a given measure is put into effect. In doing this the influence of other factors will always complicate the calculation. If a city purifies its water supply, the actual good accomplished in any year may be largely a matter of chance, depending, for example, upon whether any case of typhoid fever develops on the watershed, the time of year when it develops, and the time and extent of rainfall on this part of the watershed.

There are times when the value of a given sanitary policy may be so stupendous as to make any statement in terms of money out of the question—such, for example, as measures directed against the spread of bubonic plague. In such a case, until every practical measure of protection had been attended to, there is no limit to the money which should be spent. What is the actual value of the anti-plague work which has been done in San Francisco in recent years? Rat killing, rat postmortems, including bacteriological examinations, and the rat-proofing of all buildings, have been enormously expensive. No one can doubt, however, that this work has paid, although it is impossible even to approximate its value; for we have no means of telling to what extent the disease would have spread if this work had not been done, or if it had been done in a less thorough manner. Would the plague have spread over the United States, as in that oft-cited epidemic of the Middle Ages, which in one year claimed 25,000,000 victims in Europe—estimated as one-fourth of the entire population at that time—or would the greater cleanliness of modern cities and general measures of sanitation have of themselves made such extensive spread impossible?

Professor Whipple mentions but one measure of sanitation which does not pay "as a *life-saving* agency"—the treatment of sewage. Is it merely a coincidence that this is also one of the very few sanitary measures which a community rarely goes into for its own advantage, or as a voluntary procedure; but which is ordinarily undertaken for the benefit of others, or because of pressure brought to bear by outsiders? For the purposes of any single city, the disposal of its sewage on any area —whether of land or of water—well beyond the city limits may be entirely satisfactory. To the city itself we should not expect the investment in a disposal plant to be a paying one. Neither should we be surprised if even the benefits conferred on other communities are not always great enough to repay the cost. What do these others care about that?—it is not their money which must be spent!

There are many sanitary measures the value of which we have no accurate means of measuring at the present time. The elimination of mosquitoes in sections where malaria of a fatal type is unknown is another example. Here we would need accurate morbidity returns, and these are hardly available in any community in which fatal malaria is never contracted. In just this connection, the loose way in which malaria is given as a cause of death complicates the situation tremendously. In Richmond, for example, a canvass among the leading physicians showed that fatal malaria contracted in that city was practically unknown, yet the reported death rate from this disease averaged 23.1 per 100,000 per annum from 1904 to 1907. In 1908 efforts to secure better returns were begun, and the average annual mortality reported during the past six years has been only 3.6 per 100,000; for the past three years it has been

only 1 per 100,000; while last year (1913) not a single death was attributed to this disease. Work directed against mosquito breeding has undoubtedly lessened the *morbidity* rate from malaria in Richmond, but the reduction in the reported *death* rate is due almost entirely to insisting on more accurate statements as to cause of death. Without knowledge of these facts one would be utterly misled in estimating the value of work directed against mosquito breeding.

Nothing which any health department can do has greater value than intelligent research work. There is so much still to learn, and our problems are so different in different sections, that work of this kind is an absolute essential to intelligent development of any health department. Yet in the very nature of the case the value of research work cannot be estimated in advance; otherwise the research would be unnecessary. However, we need not worry ourselves in this connection, as such research as is done in most health departments is conducted without any special appropriation for this purpose!

In thus pointing out some of the difficulties encountered in determining the relative values of sanitary measures in every instance, it is not intended to suggest that it is ever right to make no effort to determine such values.

Even more fundamental than the sanitary survey suggested by Mr. Whipple as offering the best solution of this problem, is the securing of a thoroughly competent health officer—one who, trained in sanitary science and enthusiastic in its practical application, is also a man of vision broad enough to realize that health is not the only thing for which a city spends, and should spend, its money. Such a man is the best guide in mapping out future policies, and the employment of such a man is the best investment which any city can make. A man of this kind would, among other things, realize when he needed outside assistance; and he would therefore secure from time to time the advice of consulting experts of recognized standing in the engineering and medical professions. He would thereby demonstrate that some things have a value so great that the returns can scarcely be computed in dollars and cents.

E. C. Levy, M. D.,
Richmond, Va. *Chief Health Officer.*

✣ ✣

A Plea for Decentralized Cities

Many city planners of the old school continue to regard cities such as Paris, Berlin or Vienna, or such as Nuremberg or Rothenberg, as ideals that can be held up for imitation in modern cities. This, however, seems to be fundamentally wrong. All these supposed model cities, though they present most valuable material for study, represent an old type; they are cities of promiscuous buildings for dwellings and business purposes—a type developed in the ages before the introduction of the omnibus and the railways.

The old city type is characterized by congested tenements with stores and business premises on the ground floors and in the cellars. The most fundamental idea of modern city planning goes back to the years 1665 and 1666, when the great pest followed by the great fire revolutionized the congested city of London and, frightening some of its citizens out of the old city walls, taught them to desert the congestion and to live in suburbs spread over wide areas. The ideal city has its dwelling house district of the garden city type distinct from the business district, connections being made by those astonishing systems of rapid transit which characterize the modern big city. The extravagant land values, as one views them in the congested cities like Paris, Berlin and Vienna, prevent the proper development of private gardens and even of public parks and playgrounds, while public and private gardens can thrive in the modern decentralized cities.

Werner Hegemann.

This Magazine is Not Copyrighted

The American City *aims to make available to the largest possible number of persons the ideals of thinkers and the practical experience of workers for the betterment of urban life. To this end articles from any issue may be reprinted, in whole or in part, in local newspapers or in the bulletins of commercial or civic bodies. It is requested only that proper mention be made of* The American City *as the source of the information. If illustrations are desired, photographs will be lent without charge, or cuts sold at low rates. Articles copyrighted by their authors are so indicated. All other matter is free to those who may wish to use it.*

TRAVER HOLLOW BRIDGE, ASHOKAN RESERVOIR WATERSHED, NEW YORK

Water Supplies and the Part They Play in City and County Planning

By Charles W. Leavitt, Jr.
Civil and Landscape Engineer, New York

MANY growing communities, particularly the towns and villages in close proximity to great cities, are in a precarious position in the matter of water supply. One town may drain into the watershed which supplies the reservoirs of the town or village below; contamination naturally follows and epidemics break out, causing loss of life and property. With very few exceptions, this condition of affairs has, at some time or other, prevailed in the environs of all our large cities. It is self-evident to anyone who will devote a few moments to consideration of the subject.

The question then arises, "What can be done to rectify these existing conditions?" The answer is, "Intelligent, broad planning; not only the city, but the territory for miles around it, should be mapped out in advance of settlement."

One of the first moves in this planning is to select a source of water supply which will serve the entire district embracing the city with all its environs, or the city as one district and all or part of the environs as another. Unless the water can be obtained from some deep underground supply which naturally is, or can be, protected completely from contamination, this source should be without the district which it supplies. After such a source is secured, there must be arranged a comprehensive plan of storage and distribution, so designed that extensions and additions may come in a natural way to provide for future increase in population.

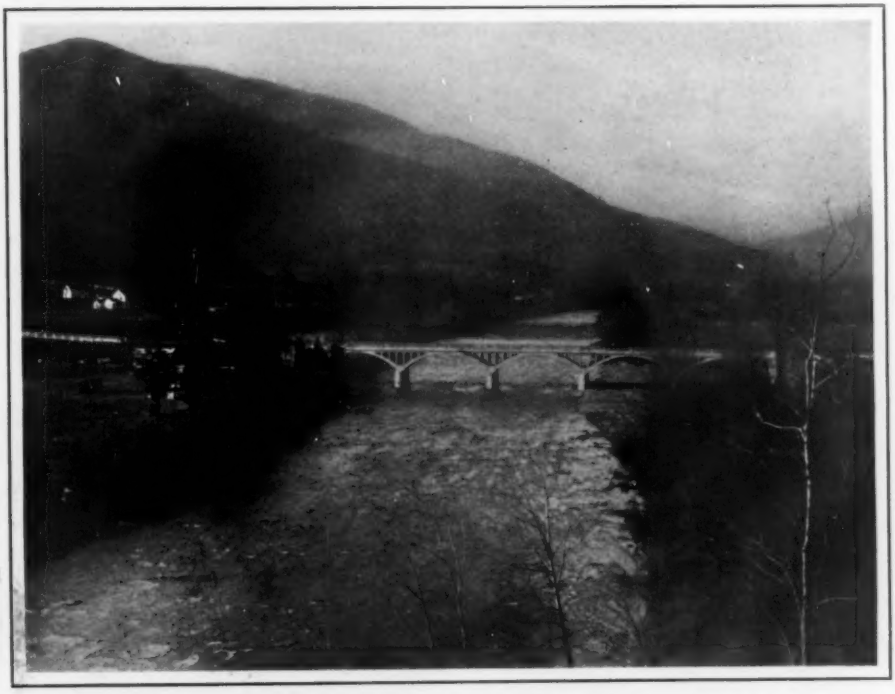
There have been several such water sup-

plies worked out in plan and put in operation; take, for example, the Metropolitan Water Works, of Boston. At the Wachusett Reservoir, situated at Clinton, Mass., some 40 miles out of Boston, there is a large dam, which impounds over 65,000,000,000 gallons of water. On the Sudbury River and its branches, near Framingham, Mass., other reservoirs have been built, storing about 16,000,000,000 gallons of water in wet seasons, to provide against water famine in the dry autumn months. About twenty municipalities are provided with water by the Metropolitan Water Works, among these being Boston, Malden, Newton, Quincy, Arlington, Nahant, Lexington, Revere, Swampscott and Watertown.

The New Jersey environs of New York City are well provided for by the East Jersey Water Company and by the Hackensack Water Company, both of which have mountain sources free from pollution. Storage reservoirs have been created at Newfoundland, Clinton, Butler, Great Notch, Newark, Weehawken, Carlstadt and Hackensack, as well as at other places, providing a storage capacity of many millions of gallons of water and supplying about forty different municipalities.

Los Angeles has planned and built a system which secures water from the Owens River, in the Sierra Nevadas, and carries it by aqueduct to the San Fernando reservoirs, whose combined capacity of over 12,000,000,000 gallons is sufficient to provide more than four months' supply for a population of 1,000,000 people, with a per capita consumption of 100 gallons per day.

One of the largest of the water supply systems in England is that of the Derwent Valley Water Board, for the benefit of the cities of Leicester, Derby, Sheffield and Nottingham. This system includes five im-



ESOPUS BRIDGE, ASHOKAN RESERVOIR WATERSHED, NEW YORK

This bridge and the one shown on the preceding page were built by the Real Estate Division of the Board of Water Supply of New York City. The dams and dikes at Ashokan, with a total length of 5½ miles, create an artificial lake, with a shore line of 40 miles and a capacity of 132,000,000,000 gallons of water. To provide a bed for this great reservoir, the city cleared away forests, moved a railroad several miles from its old course, and rebuilt many miles of road

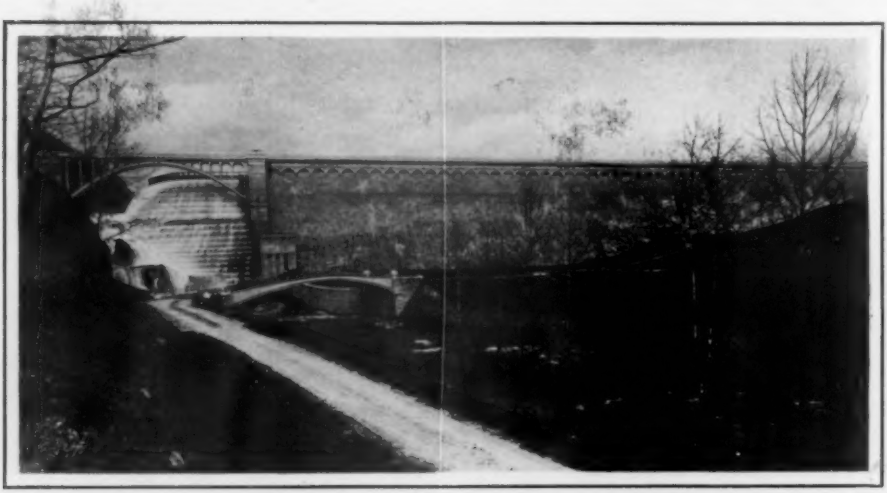
PANORAMIC VIEW OF CROTON LAKE RESERVOIR, NEW YORK

pounding reservoirs, of a combined capacity of 10,000,000,000 gallons, and will supply about 2,000,000 people.

It is a noteworthy fact that such far-seeing provisions made for public utilities comprise the most important feature of real city planning. No city should be located in a place which cannot provide a good water supply. No city can grow beyond the possibilities of its water supply, as the water supply limits the increase in population. The lack of almost any other commodity may be overcome, in some artificial way, by man's ingenuity, but water must be found at some natural source and there must be provision by which this water can be supplied directly to the populace. We have seen what tremendous efforts have been made by New York City to procure water by conducting it one hundred miles from the Catskills, through mountains and under the Hudson River, at an expenditure of hundreds of millions of dollars. Every large city, at some time in its career, must meet and solve such a problem for itself.

In arranging the reservoirs of a water supply, it is wise to use them as part of a park system. Such reservoirs make very pretty lakes, and, when surrounded by forests, not only afford fine scenery, but are much more easily kept in good condition. If properly planted and kept in order the trees give protection to the watershed by preventing washing, and if the forest is of conifers the water is kept free from contamination caused by decayed leaves.

The Spring Valley Water Company and the Contra Costa Water Company of California, which supply a number of municipalities, including San Francisco and its environs, have surrounded many of their reservoirs with beautiful drives, forming



CROTON RESERVOIR, NEW YORK, SHOWING DOWN-STREAM FACE OF THE NEW CROTON DAM AND WATER FLOWING OVER THE SPILLWAY

many attractive points of interest. The city of Manchester, in England, has a series of reservoirs around which are some of the most interesting drives in that country. The Board of Water Supply of New York City is creating parks and planting around the reservoirs, both old and new, utilizing the aqueduct lines as locations for parkways and the reservoirs as lakes surrounded by land, which is being reforested.

The Romans appreciated water and its importance, perhaps more than any other people. The water supply of Rome comes

FOUNTAIN IN ONE OF VIENNA'S BEAUTIFUL OPEN SPACES

from seven different sources. Not content with having water for practical purposes only, the Romans constructed innumerable fountains in many parts of the city, so that they might see the play of the water and be refreshed by the sound and life which it gives to the air in summer.

How splendid it would be if we, in planning our cities, would provide for fountain basins and allow the surplus water to flow freely in the open! No other display that one can imagine would do so much to brighten up our cities, form points of interest, be of beneficial refreshment in the hot months and attract to our doors the right sort of citizens. There are few cities in this country which have not a surplus of water, and, even if it will be an expense to pump or conduct this unused water to the fountains, is it not a beneficial way to spend money? Where the water becomes positively necessary for potable purposes, such fountains would have to be eliminated gradually, or else supplied from some new source, such as salt or unfiltered water from the sea or from rivers, which water, if properly handled, might create an effect quite as pleasant as that produced by the potable supply.

The street cleaning departments of our cities are only just beginning to realize the use of water in freeing cities from dirt and snow. Under many conditions it is the quickest, cheapest and best way of disposing of this form of waste. Hercules, doubtless, never could have cleaned the Augean Stables had they not been near the rivers Alpheus and Pineus, which he introduced for this purpose and found that this means of cleansing was successful. The only sanitary method of disposing of waste from plumbing fixtures is by water carriage. For fire protection, also, an ample supply of water is essential.

The question of public baths and swimming pools is very important, and, if properly attended to, will be the means of giv-

THE "STORM" FOUNTAIN IN DRESDEN, GERMANY

ing much pleasure to all classes of people, as well as helping them to retain their health and youthful spirits.

All these interesting uses, which are so essential to our life and happiness, make it apparent that we cannot give the matter of water supply too prominent a place in our town, city and county planning. To a great extent we should determine our plans in accordance with the water supply, so making the layout of a territory that we may take advantage of everything which a well-organized and ample water supply can afford.

City planning is simply the careful consideration for the present and future needs of a community, and, among other things, the reduction of these needs to diagrams illustrating their demands and the best way in which they may be met. It is, therefore, pertinent in our planning that we take into consideration the fundamental facts upon which the whole depends. Around these as a framework the lesser requirements, such as refinements of art, recreation and amusements, may be woven to form a complete plan which shall provide not only for the mere existence of man, but also for his progress in all which goes to create the best citizen.

How to Determine Relative Values in Sanitation

By George C. Whipple

Consulting Engineer, New York City; Professor of Sanitary Engineering, Harvard University

TO maintain a clean and safe environment costs money, often a good deal of money. How shall one determine whether the city's money spent for this purpose is well spent? The cost of municipal sanitary measures can usually be ascertained with reasonable exactness and hence their relative cost can be computed. But how may one know that the value of these measures to the community is commensurate with their cost and that a proper allotment of funds is being made?

It may be said at the outset that there is no definite means of ascertaining this. The question cannot be answered categorically. The best that can be done is to call attention to a few guiding principles, but if due consideration is given to them much may be gained over present practice.

In the first place, all sanitary measures are not directed to a common end. Some are chiefly and avowedly for the protection of the people against disease; as, for example, vaccination, disinfection processes, the abolition of the common drinking cup, the sterilization of public water supplies by the use of chemicals. Some are intended to protect people against accident. On the other hand, many of our most conspicuous and expensive sanitary operations—such as refuse disposal, street cleaning, ventilation of buildings and cars—promote comfort and convenience more than health. Again, we have the element of decency, which, though intangible, is nevertheless an important factor in the situation, as it merges imperceptibly into morals. The proper disposal of the excretions of the human body—sputum, urine and fecal matter—is influenced by this motive. Between health, comfort and decency we often find it hard to discriminate, and in attempting to evaluate them we encounter at the outset a great variety of philosophical conceptions.

One says, "All that a man hath will be given for his life," and argues that the greatest sums should be spent for those measures which prevent disease and sudden death. Another says: "Of what use is it to live if I cannot be comfortable? Don't nll me with vaccine and make me smell carbolic acid forever, but keep the garbage out of my sight and the dust out of my eyes." And another says, "Cleanliness is in itself a virtue," and quotes from John Wesley that "Cleanliness is next to godliness."

Where no common denominator exists it is hard to make comparisons. As a matter of fact, the ideas mentioned—life, health, comfort, decency—are prime factors and we cannot reduce them to lower terms. And so in deciding between measures which perform one or the other service we can do no more than exercise our best judgment, taking into account the sum total of the advantages to be derived from the measures recommended and our ability to pay for them.

But, in order to judge wisely in regard to these matters, it is necessary to be correctly informed as to what can be accomplished by sanitation and what need not be expected. This demands a careful study of the facts by persons competent to draw conclusions from them.

Popular Misconceptions

The popularization of sanitary science has been both beneficial and harmful. So rapid have been the advances in certain directions—so marvelous, for example, have been the results of bacteriological discoveries—that a spirit of over-confidence in new ideas has been developed. A flabby

gullibility is taking the place of robust criticism. This is due in great measure to the manner in which scientific studies are exploited or "featured" by the press. False and misleading headlines are read by the many, while the articles themselves, often of a very different tenor from the headlines, are read by the few; hence the quick reading public may get one opinion, while the more studious reader may get an entirely different opinion from the same page.

To take a specific instance, the writer not long ago published an article on the cleanliness of air, in the course of which mention was made of two or three series of tests carried out in New York and Boston to show how city air gained in cleanliness from the street upwards, story after story, in certain high buildings. It so happened that on the particular days when the tests were made the air above Broadway in New York contained fewer dust particles and bacteria than the corresponding air samples in Boston tested on another day. In quoting from this article, a daily newspaper made the headline deduction that the streets of Boston were dirtier than those of New York. This fact may be true, but no one would have thought of drawing this conclusion from the article which followed. Another reporter, with more humor, published a short story from the same data under the caption, "Vacations in Skyscrapers." This incident is amusing, but when, as in another instance, public opinion is so influenced by diluted science as to cause the legislature of one of our states to propose a law requiring the sewage of all cities to be purified in a septic tank, the matter becomes more serious.

Hence, one of the most important things to be done in considering relative values in sanitation is to educate the public as to what can and what cannot be accomplished by the various sanitary measures that are continually being proposed.

A Few Comparisons

It may be interesting to run over some of the sanitary measures in common use with reference to the nature of their usefulness, bearing in mind that the statements made are very general in character and subject to modification under exceptional conditions.

The purification of public water supplies has a very important influence on public health. But apart from this influence, clean water—as contrasted with water which is turbid, discolored, or ill smelling—has a value of its own.

Sewerage—that is, the removal of water-closet wastes and other wastes from human habitations—is an important health measure. Sewerage has also a value reckoned in terms of comfort and decency.

Sewage treatment, sometimes miscalled sewage purification, has but a small influence on the public health, except in special cases. Nevertheless, it may be very important when judged by standards of comfort and decency.

Street cleaning has an influence on public health, but its value lies chiefly in comfort and convenience.

Refuse collection and disposal have but little direct influence on the public health. Their value lies chiefly in comfort and convenience.

The ventilation of buildings and other enclosed spaces is to a slight extent a health measure, but it relates chiefly to personal comfort.

The congestion of population in the crowded districts of cities, considered by itself and apart from the habits of people, probably has less influence on the transmission of diseases than is commonly supposed; yet there is reason to believe that it has an important influence on what may be termed human vitality. Room congestion, when associated with ignorance and poverty, is an important factor in public health.

The elaborate devices employed in house plumbing to prevent the entrance of sewer air and drain air into the rooms have but slight influence on the public health. Such devices, however, promote comfort and may perhaps enhance human vitality.

The control of the mosquito by the elimination of bodies of standing water and the use of oil is in many places an important health measure. It is also an important measure considered from the standpoint of personal comfort.

The elimination of the fly by the control of its breeding place, chief of which is manure, is, in the absence of proper care of fecal matter and other body excretions, a measure which affects the public health. Likewise it is a matter of personal comfort.

It must not be understood that street cleaning, refuse disposal and sewage treatment, which are usually controlled by mu-

nicipal authorities, have no influence on public health. Of course they do have an influence. But the minor cleansing operations performed by the people themselves in their homes and schools and places of business, the practice of personal cleanliness and the exercise of such personal habits as will prevent the transmission of living pathogenic organisms from person to person through such agencies as the common use of papers, pencils, toys, drinking cups, and the like, have a greater influence. This results from the general principle that the most dangerous infection is recent infection and that in general the life of pathogenic bacteria outside of the human body is not long.

Municipal cleansing operations began before the world knew much about the transmission of disease by means of living organisms. The relation between filth and disease was suspected, however, and it is probably fair to say that most of the cleansing measures that have been in practice for many years were first undertaken chiefly from the motive of protecting the people against disease. While science has shown that their influence in this direction is less than was once thought, yet we may be justified in continuing them from the standpoints of comfort, convenience and decency. It is evident from the general tenor of current discussions and from municipal appropriations that the general public still regards them as measures that relate primarily to health.

The safeguarding of food against infection and putrefaction is a very important health measure and this is emphatically so in the case of milk. The adulteration of food is an economic question, which may indirectly affect health.

And in general it may be said that mankind needs clean air, clean water and clean food, and needs them, too, in sufficient amounts. The quantity of food, as well as its quality, is important, but this question runs away from sanitation into economics.

Cost of Sanitation and Health Conservation

In the recent special report of the U. S. Bureau of the Census on the financial statistics of cities for 1912, figures are given which show the relative cost of those measures which tend to promote cleanliness and which are classed under the general term "sanitation," and other measures which more directly affect the health of the people. It is interesting to notice that more than four times as much money is usually spent for measures which affect the public health indirectly than for those which are directly influential in controlling disease. If we consider all of the cities of the country which have populations higher than 30,000, we find that the cost of sanitation amounts on an average to $1.42 per capita per year, while expenses for health conservation amount to only $0.35 per capita per year. The figures in the above table show that the per capita expenses of both sanitation and health conservation increase considerably as cities become larger, but that the percentages which these expenses are of the total municipal expenses remain practically constant for all cities, whatever their size, averaging 8 per cent for sanitation and 2 per cent for health conservation.

If the saving of lives is to be placed above comfort and decency, it would seem logical for many cities to increase the appropriations for the work of their health departments.

Group	Number of Cities in Group	Population	Cost per Capita		Per Cent of Total Municipal Costs	
			Sanitation or the Promotion of Cleanliness	Conservation of Health	Sanitation	Conservation of Health
I.....	9	500,000 and over	$1.75	$0.44	8.2	2.1
II.....	9	300,000 to 500,000	1.51	.41	7.5	2.1
III.....	38	100,000 to 300,000	1.25	.29	8.8	2.0
IV.....	57	50,000 to 100,000	1.02	.24	8.4	2.0
V.....	82	30,000 to 50,000	0.84	.19	7.2	1.6
All cities.....	195	500,000 to 30,000	1.42	.35	8.2	2.0

Very often the cleansing operations are considered as a part of the health expenditures. In the light of modern bacteriology this is unwarranted.

The Dollar-for-Dollar Standard

Let us now consider some of the standards that may be applied to the various sanitary measures. First we have what may be called the dollar-for-dollar standard. If we in America are to be true to our caricatures we should put this at the head. We should do the things that bring dividends, and keep clean and well because it pays in dollars and cents, and because it costs money to be sick and to die and to be buried. Although this argument has moral shortcomings it is sometimes used, and it must be admitted that the dollar, as a commensurable unit, has advantages.

The money standard may be applied in two ways: first, as a unit measure of cost, and, second, as a unit of value applied to the product. To the first use one can hardly take exception; the second is less exact, but, even so, it may be usefully applied. We say that pure water saves lives, that lives have a value, and that this value is subject to calculation. In this way we compute the effect of a water filtration plant in dollars and cents and compare this with its cost to determine whether the filter is paying a dividend on the investment. Figured in this way we usually find that the filtration of a polluted water does pay a very good profit. For example, the filter in Albany, N. Y., which was installed in 1899, reduced the typhoid fever death rate in that city from 104 to 26 per 100,000, and also decreased the death rate from other diarrheal diseases. Taking current assumptions for the value of the lives that would have been lost had the filter not been built, and assuming a daily water consumption of 100 gallons per capita, we arrive at the result that the value of the lives saved was about $76 for every million gallons of water that was supplied; and inasmuch as the cost of the process did not much exceed $10 per million gallons, the filter may have been said to have yielded in its early days a sevenfold profit.

In the same way we may study the various sanitary and hygienic measures that relate to the saving of lives of young children, such as motherhood training by district nurses, the pasteurization of milk and the like. Here also we find that the value of the lives saved, estimated in dollars, is larger than the cost of the protective work, and we can compute the profit. And so we might go through the list and find whether the money spent in the eradication of smallpox is a paying proposition, and that for the suppression of tuberculosis, and whether there is profit in hospitals and Red Cross nurses and the lighthouse service of the U. S. Government.

In doing this we should come across some unexpected results. For example, does the treatment of sewage pay as a *life-saving* agency? Most people at first thought would say "Yes," but on study the proof of this fails to materialize.

In considering sanitary expenses on the dollar-for-dollar basis, we find that money spent for some forms of sanitation reduces other costs. Cleansing of the atmosphere from smoke reduces laundry bills, lessens the need of air washing, and furthers the growth of vegetation. Money spent for sewage treatment may mean that streams and harbors have an added value as parks and playgrounds. Money spent for water softening means less money spent for soap and the care of boilers. In various ways one expense may be substituted for another with the enhancement of personal comfort as an additional item.

Value of Human Life

In making these calculations we are in the habit of attributing a certain value to a human life. We say, perhaps, that a man of a certain age earns so much above his cost of support, that he has a certain expectation of life and therefore his prospective value to society is so much. Economically this is doubtless true. The man's dependants recognize it, but does society recognize it? Chapin asks this pertinent question:

> "When a man dies do the people who are left believe that their own wages would have been higher if the man had lived, by reason of his worth to society? If they think about it at all are they not more likely to argue to the contrary, and say that, in accordance with the law of supply and demand, limitation of wage-earners tends to increase wages?"

Thus, however much we may compute and argue on economic grounds, the dollar-for-dollar standard does not appeal to the

mass of people. Bond issues for sanitary reforms will not be voted in order to conserve human life reckoned as economic wealth. For deep down in our hearts we care more for each other than we do for material things. "Life is more than meat, and the body than raiment." The saving of life for its own sake, the saving of life because we want our friends to be with us, is a far more powerful argument for the establishing of life-saving agencies than any appeal to the pocketbook. Humanity, after all, is what counts.

Again, we often hear this (I quote from a prominent sanitarian): "No expenditure can be too great if a single human life is saved. Life is priceless." From an individual standpoint this may be accepted, but the world knows that in the aggregate this is not true. If people actually believed that life was priceless, wars would cease and people would stop taking chances of accident in automobiles and aeroplanes. The theory of the priceless life carried to extremes would be ridiculous. What we call life-saving is in itself something of a misnomer. Actually it is only life lengthening. This is recognized in the new phrase that we are beginning to hear—"life extension."

The Life Standard

There is, however, a very proper and very useful way to employ the money standard in sanitation, and that is to find in what direction the expenditure of a given sum of money will save the largest number of lives. This is one of the greatest questions that a sanitarian can consider. It is to-day the most important of all hygienic problems because it comprehends all others.

We spend our money for life extension partly by the inertia of old habits and partly by the spur of each new discovery in science. We take up the new ideas one by one and ofttimes push them to extremes, regardless of their relative worth. Their newness obscures their true value.

If the life-saving agencies are to yield their best results, we must place them upon a quantitative basis. That is to be the keynote of the new era upon which we are entering. Some might call it "Efficiency in the conservation of life."

The Vitality Standard

Another standard which has never yet been put into actual use relates to the effect of municipal environment on the physique and vitality. Do cities yield as strong and healthy men as the country? Does good ventilation add to one's strength and stature? Does factory sanitation lessen the discomfort and the burden of toil, as well as increase the efficiency of the laborers? As yet no means have been devised for applying this standard. Some weight should be given to it in comparing the relative value of sanitary measures. Health has its positive as well as its negative side. The prevention of disease is not the only proper function of a health department. It would not be out of place to consider expenditures for parks, for fresh air excursions and for public baths as health measures.

The Standard of Comfort

Money and length of life are not the only things to be considered. It is what lies between one's birth and death that really counts. Of what avail to add a few years to the length of life if personal comfort and happiness are not also enhanced! What, after all, is the chief end of man, to live long upon the earth, or to obtain the best enjoyment from the best environment? Whatever may be our philosophy, we must admit that our five senses deserve consideration. Judged from this standpoint some of the sanitary arts which do not yield a dollar-for-dollar profit begin to loom large.

Clean streets, clean houses, clean cars, clean rivers and clean harbors have a value because they tend to make life more comfortable, more decent and more moral. Sewage treatment, while it does not pay large vital dividends, may yet yield a profit measured in terms of comfort and decency. To what extent can physical comfort and happiness be secured in a tenement house where people live crowded together one thousand to the acre—forty-three square feet of land for each person, a square seven feet on a side—not much larger than a respectable cemetery? The greatest evil of congestion is that true home life is rendered impossible. The greatest evil of machine labor is that the laborer gets little mental pleasure from his work. The lack of home comforts and of comfortable working conditions is bound to influence both vitality and health.

Sanitary Surveys

In applying these general ideas to any particular case, it is necessary first of all to obtain a general view of all of the local conditions. This demands a sanitary survey.

The sanitary survey is not a new idea. Such surveys were made in many cities of Europe and America fifty and even one hundred years ago. The histories of the surveys made in Boston, New York, and elsewhere are of great interest and deserve careful study by modern sanitarians. In our new surveys we find history repeating itself—but with one difference. We now have a knowledge of the germ theory of disease, and this has resulted in a changed point of view.

The planning of a sanitary survey should be placed in the hands of some one sufficiently familiar with all phases of the problem to give each its true value. Usually it is preferable to have it conducted with the coöperation of the municipal authorities, for they alone have access to the most important statistical material. For example, the survey which is being conducted in Cambridge, Mass., is in charge of a commission composed of the city engineer, the superintendent of streets, the health officer and two university professors. The results of such surveys are likely to show inefficient allotment of the funds devoted to sanitary work. A slight readjustment might result in the saving of many lives. When the practice of sanitary surveying has progressed somewhat further than it has, it may be desirable to standardize the methods of expressing the results. Possibly a system of grading the sanitary conditions of cities may be devised, similar to the scoring system now applied to milk farms.

Vital Statistics

An important part of any sanitary survey is the study of the vital statistics of the community under investigation. This must not be confined to a mere study of crude death-rates. It is necessary to take into account births as well as deaths and to consider the composition of the population as to age, sex, nationality, occupation, and social and economic conditions.

Perhaps no branch of science has had more misuse than that of vital statistics. In this respect we are behind, and not ahead of the statisticians of former days. We are too much inclined to deal with crude death-rates and general averages, quite forgetting that the individual observations are of more importance than the average. We do not analyze our statistical material with that degree of care which is necessary to a full understanding of the facts. We are likewise inclined to make statistical comparisons of data between which there is no causal relation. During the last generation there has been a marked decrease in the crude death-rate in cities the world over. We have been too quick to assume that this decrease has been due to improved sanitation and the rise of the science of bacteriology. To be sure, this has been an important influence, but we forget that a large part of the decrease has been influenced by falling birth-rates and immigration and that there are close relations between death-rates, birth-rates, marriage rates and economic conditions. We also see it stated that the sanitary condition of a city is measured by its infant mortality rate, a fact which does not appear to be borne out by statistical evidence. The death-rate from children's diseases has been steadily decreasing for a generation, and this may be fairly attributed to improved environmental conditions; but it is only within a comparatively short time that infant mortality rates have declined, and this decline appears to be associated more closely with motherhood training than with sanitation. In many ways it may be shown that the whole subject of vital statistics needs to be placed upon a higher plane.

Finally, what is most needed is a careful correlation between vital statistics and the sanitary conditions of our cities. This demands a minute analysis of the statistical material. At present our health department reports are utterly inadequate to enable the necessary correlations to be made. In order to determine relative values in sanitation, it will, therefore, be necessary to develop anew the science of *demography*—a science destined to influence profoundly the health, lives and morals of the race.

VIEW FROM THE CLUB HOUSE, HAMPSTEAD
Showing houses built by Second Hampstead Tenants, Ltd.

Co-partnership Housing in Great Britain

A System Which Provides the Advantages of Personal Interest in Property Combined with Safeguards to Prevent Such Interest from Operating Against the Public Good

By Henry Vivian, J. P.
Chairman of Co-partnership Tenants, Ltd., London

HOUSE property is, next to land, distinctly the kind of property that lends itself most readily to being used, if the use be unregulated, in a way unsatisfactory both to the community and to the individual. In most other forms of property no great harm is done, if every factor of ownership is made to serve the owner's immediate interests and fortune; but in the case of house property it is of vital importance that the long view of things, as distinguished from the short view, should be taken.

For example, given land for a building estate near a large town at a reasonable price, if the long view of profits or value is taken, it is good business to provide reasonable gardens to each house, certain open playing spaces for sports, a good drainage system, and to encourage the planting of trees; but not to create excessive ground rents. It also pays to build the houses of sound material, to design them so as practically to insure a permanent demand for them, and to group them to produce the best architectural effect. If the short view is taken, and the chief object is to make the greatest immediate profit, one can afford to be indifferent on some of these points, and to leave the future to take care of itself.

Further, assuming that the estate has been developed in a satisfactory way, the system of ownership and administration determines whether the value of a good beginning is realized by the community. In the case of small classes of property, if sites and houses are sold to individual purchasers, the chances are that some of these will soon part with their property to undesirable people, who will use it in such a way as to frustrate the good intentions of those who laid out the estate. If one or two houses in a street pass into the permanent ownership of undesirables, who rack-rent and otherwise misuse the property, the value of the whole street rapidly diminishes. The Ecclesiastical and Church Estates Commissioners, whose business it is to manage the very large estates of the

Church of England in such a way as will enable them to endow or augment benefices, deal with this point in one of their circulars. They say:

"It is not safe merely to hand over the land for such purposes by way of leases to private individuals whose interest as lessees is mainly to secure a profitable return for their outlay in building. The erection of suitable houses can doubtless be assured in this way by the control which the lessors are able, before leases are granted, to exercise over their lessees as to the design and construction of the buildings to be placed on the land; and their continued maintenance as dwelling houses can be safeguarded by covenant. But, upon the grant of the leases, the future management of the houses necessarily passes into the hands of the lessees, and the Commissioners or other lessors cannot effectively guard against sub-letting, which leads to the evil of the 'middleman,' and the raising of rents inevitably followed by sub-division of tenements and overcrowding."

The system which encourages the workman to buy his own house, but creates no interest on the part of the residents in keeping up the character of an estate as a whole, makes no provision for dealing with such evil.

Again, even from the individual standpoint, there is considerable room for improvement in the policy usually pursued, more particularly if the individual is a workman with very limited means. It is often risky as well as expensive for workmen to try to buy houses they live in on the usual individualistic plan.

To deal first with the expense: A plot of land bought singly will cost more in proportion than one of fifty or one hundred plots bought together. The legal expenses, the survey fees (and possibly the building of the houses), cost more in proportion. The interest to be paid, and the legal charges in connection with the borrowing of the capital which a workman usually requires to enable him to build or buy, are also proportionately heavy. This is because everything is done on a retail basis.

MEADVALE ROAD, EALING

Secondly, with regard to the risk: Large numbers of the best class of workmen in cities have no certainty of permanent employment at one place. This often means that after they have partly bought a house by a comparatively expensive method, they are burdened with the expense of finding a tenant for it and collecting the rent, or else must sell their interest, usually at something considerably below what it has cost.

Many reformers, with these facts before them, conclude that the only other alternative is municipal building, because in this way we get the economy of wholesale deal-

CLUB HOUSE, EALING

ing, relieve the individual risks, and prevent the evils which arise from individual ownership. Such reasoning, however, ignores the very important and good part that individual interest—using the term in its best sense—plays in the management and use of house property, and the value to the individual and community of enlisting it.

The problem would seem to be to get the stimulus to economy and educational value which arise from personal interest in property, combined with safeguards to prevent such interest expressing itself in a manner

CHILDREN'S PLAYGROUND AT EALING

CO-PARTNERSHIP HOUSES, CRESWICK WALK, HAMPSTEAD

contrary to the public good. A system of co-partnership tenancy appears to meet the situation, and it is the growth of societies applying this principle which I now propose to describe.

Organization of Co-partnership Societies

These societies are registered under the Industrial and Provident Societies Acts with limited liability. The capital is raised in shares of £1 to £10 each, and in loan stock or tenants' co-partnership stock, payable in full or by instalments. The committee or board of management is elected by the shareholders, and usually includes some who are tenants of the society. The methods adopted are briefly as follows:

1. To purchase a site in the suburb of a growing town, and to plan or lay it out in such a way as to provide: (*a*) suitable playing grounds for the tenants and their children; (*b*) a reasonable limitation of houses to the acre, so that each house may have a private garden; (*c*) pleasing architectural effects, both in the grouping and designing of the house.

2. To erect substantially built houses, provided with good sanitary and other arrangements; to let these at ordinary rents, giving the preference to investors desiring to become tenants; to pay a moderate rate of interest on capital—usually 5 per cent on shares and 4 or 4½ per cent on loan stock and tenants' co-partnership stock; and to divide the surplus profits (after providing for expenses, repairs, and property reserve fund) among the tenant investors, in proportion to the rents paid by them. Each tenant investor's share of profits is credited to him first as a repairs fund, and then capitalized until he holds the value of the house tenanted by him, after which all dividends may be withdrawn in cash.

In such societies it should be possible for an individual to obtain practically all the economic advantages which would arise from the ownership of his own house. Capital is obtained at a rate of interest below which the individual could not usually borrow to build or buy his own home, whilst the preliminary and other expenses are less than under the individual system. By taking as his security scrip for stock in an association of tenant stockholders, instead of the deed of a particular site and house, the tenant shares the risk of removal with his co-partners in the tenancy of the estate. The value of his accumulated savings is therefore kept up, and can be transferred, if desired, at less cost than if it were land or house property of the same value. The results of a workman's thrift, as well as of his labor, are in this way made mobile, and this is important if he is to get the maximum reward for his knowledge and industry. Further, tenants having an interest

in the capital of the society are encouraged to promote its welfare.

The first housing society to adopt the system of sharing the profits with its tenants after a fixed interest on capital has been paid, was the Tenant Co-operators, Ltd., which was registered in 1888. This society, at the time of its coming of age, owned property valued at a little less than £30,000, situated in five different districts. In 1901, however, there came into existence another society in the western outskirts of London, the Ealing Tenants, Ltd. It confined its efforts to one estate with such effect that at the end of its fifth year it had property of equal value to that of the then eighteen-year-old Tenant Co-operators, Ltd. By concentrating its operations on one estate,* the Ealing society was able to include many features, such as model estate plans, an institute, recreation ground and playing sites, which are impossible if the property is scattered in different districts.

Ealing thus established for itself the claim of being the pioneer co-partnership suburb, and under the title of "Co-partnership in Housing" the movement has grown rapidly in the last few years. The progress has been aided by the Co-partnership Tenants Housing Council, which was established in 1903 to give advice to new societies wishing to develop estates by the methods which had been successfully inaugurated at Ealing. A business federation known as the Co-partnership Tenants, Ltd., was formed in 1907, and most of the co-partnership housing societies then existing, realizing the value to themselves of such a central society, readily joined.

Objects and Government of the Federation

The objects of the Co-partnership Tenants, Ltd., are:

(*a*) To provide expert advice, based on accumulated experience, upon buying, laying out and developing an estate.

(*b*) To raise capital for such societies as are admitted to the federation and accept its advice.

(*c*) To pool orders, where practicable, so that the benefits of wholesale dealing in building materials shall be secured to the societies joining the federation.

The federation is governed by a board, the members of which are drawn mainly from the committees of the societies in membership with it. It has:

(1) *A Finance Department*, for raising money either as shares, loan stock, or by way of mortgage, to meet the cost of building on the various estates, and for advising societies on all matters of finance in developing estates.

(2) *An Accountancy Department*, for giving advice to societies in membership concerning the best method of keeping accounts, and for seeing periodically that the method is adhered to.

* For map, see THE AMERICAN CITY for April, 1914, page 332.

CO-PARTNERSHIP HOUSES BUILT BY OAKWOOD TENANTS, LTD., HAMPSTEAD

(3) *A Buying Department*, through which orders for material are pooled, and the best terms secured for cash and large dealings.

(4) *An Architectural and Building Supervision Department*, which is at the service of societies in laying out their estates and planning and building their houses, the experience and plans of one society being utilized as far as is possible and desirable, for others.

It is intended at an early date to undertake the insurance of the property of its members against fire.

The progress of the movement may be gathered from the following figures showing the cost value of the property built by those societies which have been aided by Co-partnership Tenants, Ltd.

1903	£10,237
1905	36,390
1907	204,639
1909	522,997
1911	1,042,855
1913	1,377,532

The growth of the estates acting under the direction of Co-partnership Tenants, Ltd., has attracted considerable attention among those interested in housing and estate planning, with the result that, apart from over thirty co-partnership tenants societies in England not in membership with Co-partnership Tenants, Ltd., organizations have been established to carry on similar work in Scotland and in Wales; and, whilst not responsible in any way for the business management of any of the co-partnership estates or societies not in membership with it, Co-partnership Tenants, Ltd., has been able to give useful information to those engaged in promoting the work elsewhere. An important development in England is the organization of the Rural Co-partnership Housing Council with the object of adapting the co-partnership idea to the circumstances of rural life.

Repairs and Maintenance

The houses as completed are in most cases occupied by investors, who in addition to paying the usual market rent for the premises, increase their holding of capital by small periodic payments. Economy in developing is followed by economy in administration. Tenants are required to pay for the internal repairs, apart from those of a structural nature. Thus they naturally keep the necessity for such work as small as possible. The society undertakes the external and structural repairs. The rent bonuses being drawn from surplus profits, each tenant is encouraged to do his best to help the society, and the greater the efforts of the tenants in the direction of economy, the larger the rent bonus is likely to be. Loss of revenue by non-payment of rent is avoided by the society having a lien on the tenants' investments. The societies have not been at work long enough to test the full economic advantages of this system, or to allow of a final estimate being made of what those will prove to be. After meeting all charges and paying 5 per cent interest on capital, the Ealing and Hampstead societies have been able to declare dividends varying from one to two shillings in the pound (5 to 10 per cent) on rent. Provision is made for insuring that capital is available in years to come for keeping the property of an estate at least equal in value to that of other competing estates appealing to the same class of tenants. No one can say what the taste or standard of demand will be in any direction in thirty, forty, or fifty years. Architecture, methods of sanitation, heating, provision of open spaces, any or all of them, may undergo a change involving expenditure. The existence of a vast amount of unlettable residential property in and near our big towns to-day is largely due to the fact that the owners (frequently small ones) have no capital fund by means of which the property can be brought up to the needs and demands of the time. To provide for this, each society creates a property reserve fund at the rate of 6s. 8d. per hundred pounds per annum, which, capitalized at 4 per cent, will give the sum expended on the property in sixty-five years.

The Sharing of Great Things Instead of the Individual Possession of Small Things

Raymond Unwin, the consulting architect to the Co-partnership Tenants, Ltd., says:

"The introduction of the co-partnership principle marks a new era in housing; for not only is the individual likely to procure for himself a better house and larger garden by obtaining them through a co-partnership society than by any other means, but the introduction of coöperation opens up quite a new range of possibilities. For through the medium of coöperation all may enjoy a share of very many advantages, the individual possession of which can be attained only by the few.

The man who is sufficiently wealthy may have his own shrubberies, tennis courts, bowling green, or play-places for his children, and may, by the size of his grounds, secure an open and pleasant outlook from all his windows; but the individual possession of such grounds is quite out of reach of the majority.

"A co-partnership association can, however, provide for all its members a share of these advantages and of far more than these. In fact, the scope of the principle is limited only by the power of those who associate to accept and enjoy the sharing of great things in place of the exclusive possession of small things. In exceptional cases some enlightened owner or company may so lay out an estate as to provide for the common enjoyment of some of the advantages of the site; but usually everything is sacrificed which will not produce a revenue, and which cannot be divided up into the individual self-contained plots, marked by the maximum degree of detachment, which are so desired by those who know only of individual possession and have not learned the joys of sharing.

"Where a site is being developed on co-partnership lines the whole position is changed. Instead of thinking and planning for only a chance assortment of individuals, there is now a whole to be thought of. A home is to be planned for a community having something of organized life. A center is needed for this life; institutes, clubs, schools, or places of worship may form such a center towards which the design can be made to lead. The site can be thought of and planned as a whole, and the certainty of some degree of coöperation will enable spots of natural beauty and distant views of hill and dale to be preserved for common enjoyment. Play-places and shelters for the children, greens for tennis, bowls, or croquet can be arranged, with the houses so grouped around them that while they provide the occupants with ample recreation ground they also both afford more pleasant prospects from the windows and more attractive views for the streets. In this way, instead of the buildings being mere endless rows, or the repetition of isolated houses having no connection one with the other, they will naturally gather themselves into groups, and the groups again clustered around the greens will form larger units, and the interest and beauty of grouping will at once arise.

"The principle of sharing, therefore, not only causes each individual house to become more attractive, but gives to the whole area covered that coherence which, springing from the common life of the community, expresses itself in the harmony and beauty of the whole. This harmony of outward expression must in turn react on the life that flourishes under its influences, at once stimulating the growth of coöperation and giving wider opportunities for its practice."

Practical Social Results

Some of the co-partnership estates have now been established sufficiently long to allow of an examination of some practical social results of the system, and as far as these are at present available, they are most encouraging. It is found that tenants respond readily to the various opportunities for mutual help and joint action. Gardening (with collective buying and periodical flower shows), lectures and classes, sports and recreations of all kinds, are popular on all the estates, and a high standard of social life is reached. More important, however, are the improved health conditions revealed by recent independent statistics. Dr. Andrew, the Medical Officer of Health for Hendon (the Urban District in which the Hampstead Garden Suburb is situated), gives some interesting figures in his report for 1912. The gross death rate for the whole of his District is 10.14 per 1,000; for the Suburb the rate is 3.8: the rate for England and Wales is 13.3. The particulars of infant mortality are equally striking: the rate for the Hendon District is 54 per 1,000; for the Suburb, 11.2; for England and Wales, 95.

Wherever human beings are concerned, considerable elasticity is required in the application of any theory. They have a saying in Yorkshire that "Nowt's so queer as folk," and this is particularly true as regards questions affecting housing and homes. Some people take no pride in either homes or gardens; some have no aptitude for working together; some are given to theorizing and lack the gift of common sense, and so on. Variety in experiment will better enable conclusions to be drawn as to the best way—or as to whether there is any best way—of handling problems which arise as a result of these differences in character. That the co-partnership in housing movement, however, meets the needs of a growing section of people is demonstrated by its steady progress, and by the fact that the number of those wishing to live on co-partnership estates is constantly increasing, while, once having become residents, very few desire to leave.

THE FOREIGN DEPARTMENT

The Harbor of Hamburg

Some Interesting Facts Concerning the Greatest Port of Europe

By Edward Ewing Pratt, Ph. D.

Manager, Industrial Bureau of the Merchants' Association of New York; in Charge of Courses in Economics in Europe, New York University

HAMBURG is located about sixty-five miles from the mouth of the River Elbe, a comparatively small waterway, but one with far-reaching connections, extending to Eastern Germany and even into Austria. The Elbe must be constantly dredged in order to maintain a navigable waterway for large vessels, and, even in spite of the best efforts which have been exerted, the larger liners have to discharge a part of their cargoes at Cuxhaven, located at the mouth of the river.

In spite of these drawbacks, Hamburg has gained steadily in the volume and value of her trade and commerce. In spite of the keen competition with the ports of Bremen, Antwerp and Rotterdam, Hamburg is still preëminent among the ports of Europe. The success of Hamburg, like that of every other great port, is primarily due to two conditions: (1) to the existence of a vast and rich "hinterland," and (2) to easy and economical means of transportation in getting goods to and from it.

Behind Hamburg, as a great producing machine and at the same time a tremendous consuming power, is the German Empire, a nation which has found itself industrially and commercially within the last four decades, and which is to-day the most virile nation of Europe. Making tributary this vast area with its great population is the wonderfully developed system of inland waterways of Germany. Through the River Elbe the barges from Hamburg can reach almost every section of the German Empire. The importance of this trade to Hamburg is shown in the following table, which gives the inland water shipments to and from Hamburg (1908).

	Shipped FROM Hamburg to Interior by Water.	Shipped TO Hamburg from Interior by Water.
	Tons.	*Tons.*
Food products	1,263,246	1,241,793
Building materials and fuel	1,994,136	907,232
Raw and semi-manufactured products	2,193,764	755,401
Dry goods and fancy articles	7,876	3,980
Products of art and industries	63,702	174,370
Total	5,522,724	3,082,776

As a matter of fact, the inland water shipments play an extremely important part in the commerce of the city of Hamburg. The rates by water are much lower than by rail, thus increasing the strategic importance of a location on a waterway with far-reaching inland connections. The following figures give the comparative water and rail rates for certain commodities from Hamburg to Dresden, a city 351 miles distant by the shortest water route and located quite on the opposite side of the Empire.

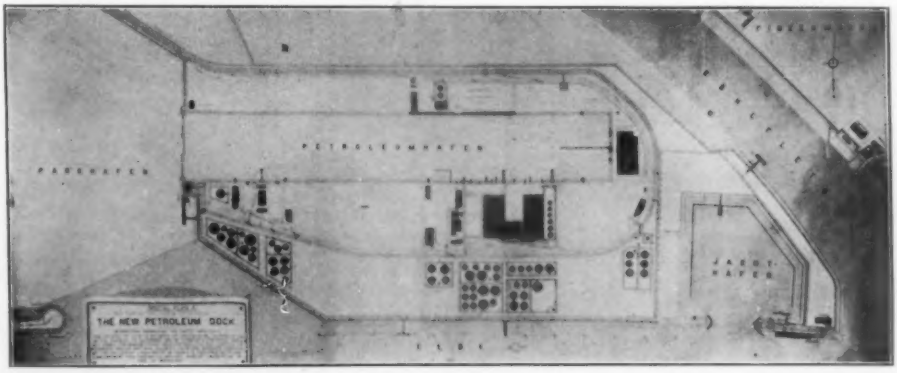
HAMBURG-DRESDEN.

	Rail—460 Kilometers (or 286 Miles.)			Water—565 Kilometers (or 351 Miles)		
	Per Ton.		Per Ton-Mile	Per Ton.		Per Ton-Mile
	Marks	*Dollars*	*Cents*	*Marks*	*Dollars*	*Cents*
Sugar	28.80	$6.85	2.39	5.30	$1.26	0.36
Salt	11.30	2.69	.93	5.30	1.26	0.36
Grain	21.90	5.21	1.82	5.30	1.26	0.36
Coal	9.90	2.36	.83	5.20	1.24	0.35
Iron	17.30	4.12	1.44	5.50	1.31	0.37
Zinc and lead	21.90	5.21	1.82	5.50	1.31	0.37
Phosphate	9.90	2.36	.83	5.50	1.31	0.37
Mineral oils	21.90	5.21	1.82	5.50	1.31	0.37
Gen'l merchandise	43.70	10.40	3.46	7.50	1.79	0.51

THE MAIN CHANNELS AND BASINS OF THE HARBOR

One of the most interesting features of the port of Hamburg is the Free Port. The Free Port, which is to be found elsewhere in Europe only at Bremen and Copenhagen, is a territory within a country where there is no customs jurisdiction and where goods may be landed, repacked, manufactured or treated in any way, and reshipped without the formality of bonding or even customs inspection. If, however, these goods are finally to be taken from the Free Port into the country, as, for example, into Germany, they are then subject to the regular duties which would be charged upon them if brought in directly from a foreign country. In short, a Free Port is a big, convenient, bonded warehouse without any of the inspection nuisances and red tape. The Free Port of Hamburg is especially interesting at present in view of the proposal of the Merchants' Association of New York to establish a Free Port on New York harbor.

The Free Port of Hamburg is a very natural outcome of the Free State of Hamburg, which came into the German Customs Union only on condition that its harbor should remain free. As a matter of fact, practically the entire harbor of Hamburg is a Free Port, and in only small portions along the canal, which completely surrounds it, are there docks and quays for vessels which wish to discharge their car-



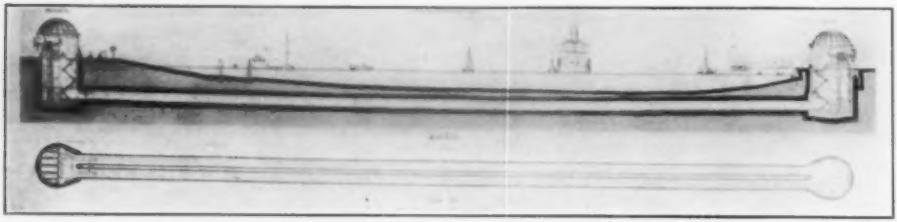
THE PETROLEUM DOCK, AT THE WESTERLY END OF THE HARBOR

Its entrance can be closed by a fireproof pontoon. All the tanks containing highly inflammable oils are erected on separate grounds and are isolated from the business premises by a driveway. Each group of tanks is enclosed by an embankment, which is high enough to protect against inundation in case of breakage

goes under the customs regulations and not in the Free Port. The Free Port section of the harbor is shut off from the remainder of the city by a stockade, canal and by imaginary lines guarded by customs officials. Boats coming up the Elbe or leaving the Free Port for other countries are in charge of a pilot who is a regularly sworn customs official and sees to it that no goods are landed except in the Free Port or under the inspection of customs officials.

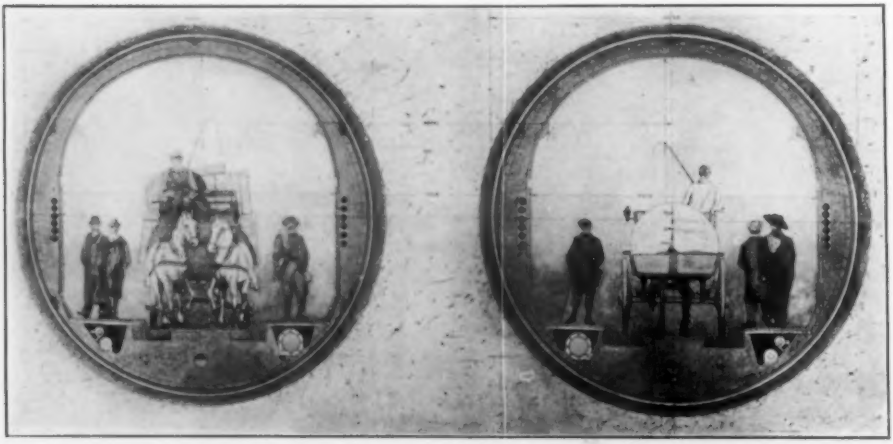
The Free Port is extremely valuable because it facilitates the free transshipment of goods and makes Hamburg the center for the trade and commerce of Europe. The universal testimony is that the Free Port has aided immensely in building up the present greatness of the commerce and trade of Hamburg.

There is, perhaps, no port in the world which is so completely equipped mechanically. Usually the quays are built of concrete or solid masonry and the piers are of great length. One of the Hamburg-American piers is 3,500 feet long. These piers are equipped (as shown in Figures 3 and 4) with sheds for receiving and temporary storage, railroad tracks along the edges of the quays, and large traveling cranes which are distributed along the front of the piers in great numbers. In addition to the pier equipment, the vessel in dock has the ad-



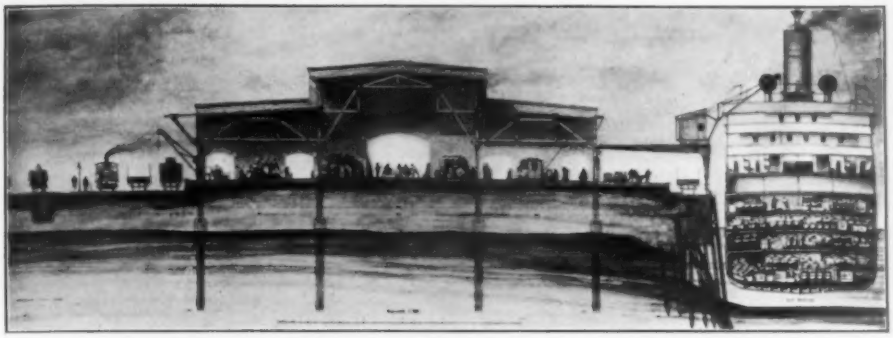
LONGITUDINAL SECTION THROUGH A TUBE OF THE ELBE TUNNEL

Showing the depth of the tunnel and arrangement of the entrances and driveways. There are two tubes connecting the two entrance shafts. Each shaft has four elevators for trucks and two for passengers. There are also spiral stairways along the walls.



CROSS-SECTION THROUGH THE TWO TUBES OF THE ELBE TUNNEL

Showing the arrangement of the roadway for vehicles and the sidewalks for pedestrians and the conduits underneath



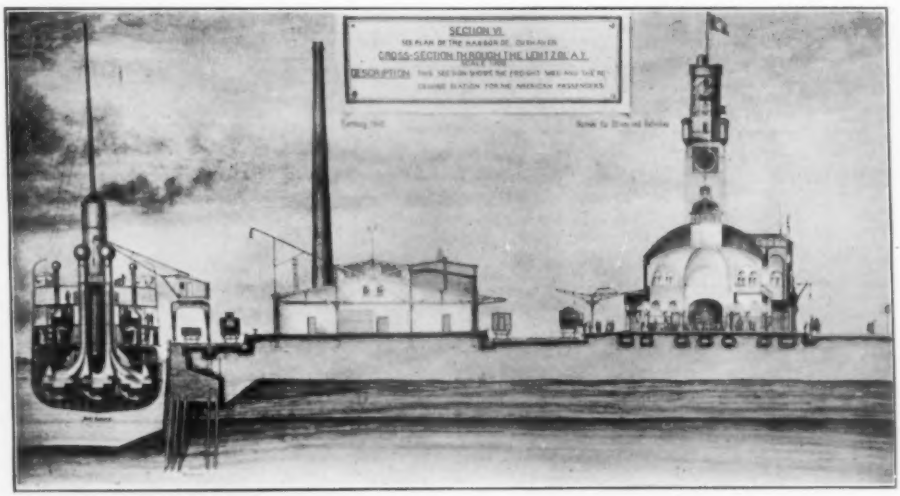
CROSS-SECTION OF THE KAISER-WILHELM HARBOR PIER

The one-storied pier shed, typical for all sheds in the port, merely serves the rapid discharge of the ship's cargo. It shelters the goods only for a short time to be counted, sorted, and arranged for shipment. The transfer of the freight to the tall warehouses at the water's edge or in the city is done either by rail or by truck from the landside, by barge from the waterside. The track on the pier's edge is for the conveyance of coal only.

vantage of a whole fleet of barges and smaller craft which surround it and assist in loading and unloading.

The actual water front of the harbor is rather meager. There are actually only 41 miles of it, of which only about 13¾ miles are supplied with quays. This water front, however, is used intensively and the speed of loading and unloading is almost incredible. Much of the loading and unloading of the heavy and bulky cargoes is done at the mooring posts in the center of each basin, the vessel thus avoiding quay dues, which are designedly high. As a matter of fact, two-thirds of all the vessels entering the port of Hamburg and almost one-half of the tonnage are discharged in this way. Many of the smaller vessels never touch the piers and quays.

There are at present some very extensive additions being made to the harbor of Hamburg, and the city is spending about ten



A CROSS-SECTION OF THE LENTZ QUAY ON THE HARBOR AT CUXHAVEN

Showing the freight shed and the receiving station for the American passengers, also the traveling cranes with railroad tracks beneath them

million dollars in providing new basins, piers, and quays for its increasing commerce. It is interesting to note that Hamburg, completely surrounded as it is by Prussia, is able to extend its facilities only by making favorable exchanges with the Prussian Government. In this way it has provided additional space for the Petroleum Harbor by agreeing to deepen the Kohlenbrand, which the city has purposely neglected in order to restrict the possibilities of the development of a nearby Prussian seaport.

The Petroleum Harbor, which is quite separate from the rest of the harbor, is shown in Figure 2. The entrance is closed by an iron pontoon, which prevents burning petroleum from flowing out into the main harbor and endangering all the shipping there. This pontoon gate is always kept closed at night. Around the Petroleum Harbor the shores are lined with tanks set in groups, surrounded by embankments to protect the others in case of a break or in case of fire.

The Elbe Tunnel, which is one of the interesting sights of the port of Hamburg (see Figures 5 and 6), was built for the convenience of those who wish to get into the section of the port on the side of the Elbe furthest from the main section of the city. It is largely used by teams and pedestrians and is in many ways more convenient and less expensive than the bridge.

There are many other interesting features about the harbor of Hamburg, as, for example, the world-wide activities of the Hamburg-American Line, the headquarters of which are at Hamburg; the emigrant village erected by the steamship company on land furnished free for that purpose by the Hamburg government; the great storage warehouse business carried on in the main by private warehouse companies within the Free Port; and the harbor of Cuxhaven at the mouth of the River Elbe.

It is well to remember, in discussing the harbor of Hamburg, that it has attained its present position in the world of trade and commerce only by careful, scientific and far-sighted development. In spite of the great expense to which Hamburg has gone in dredging the channel, it is still not deep enough to make it practical to dock the Imperator and the Vaterland regularly at the Hamburg quays in the Free Port. Therefore, it has been necessary for the United States government to appoint a consular agent at Cuxhaven.

American municipalities, especially those with fine natural harbors and with aspirations for foreign trade, would do well to take a page from the experience of Hamburg. It would do them good to see how Hamburg has actually done the job. Hamburg has worked out a well-rounded, economical plan of harbor development, combining ocean-going traffic, inland waterway and rail communications, warehouses and industrial districts, and last, but by no means least, convenient customs arrangements. Little wonder that Hamburg has been forging ahead as a seaport.

Further information about the Port of Hamburg and other important waterfront development may be secured from the following publications:

"The Port of Hamburg." By E. J. Clapp. Yale University Press. 1912.

"Free Ports of Europe." By P. B. Kennedy. The Merchants' Association of New York. 1914.

"American and European Waterways." By E. O. Merchant. Report of the National Waterways Commission. 1912.

"Report on the Mechanical Equipment of New York Harbor." By B. F. Cresson, Jr., and Charles W. Staniford. Submitted by Calvin Tompkins, Commissioner of Docks, New York City. 1912.

"Report on Physical Characteristics of European Seaports." By Charles W. Staniford. Submitted by Calvin Tompkins, Commissioner of Docks, New York City. 1911.

"Toronto Waterfront Development, 1912-1920." The Toronto Harbor Commissioners. 1913.

"Seaport Studies." By Charles Evan Fowler. In January, 1914, issue of University Extension Journal, University of Washington, Seattle, Wash.

Ideas for the Commercial Executive

Edited by J. Harold Braddock
Executive Secretary, The American City Bureau

Organizations in South and West

In 1912 the Bureau of Foreign and Domestic Commerce issued a monograph entitled "Commercial Organizations" (Special Agents Series No. 60), covering general features of commercial organization work. This is now supplemented by a second publication under the same title (Special Agents Series No. 79, obtainable for ten cents from the Government Printing Office, Washington, D. C.), in which the salient features of individual commercial organizations of twenty-five southern and western cities are covered. The data given are valuable not only as conveying information regarding the activities of the particular organizations mentioned, but notably as offering suggestions to those wishing to glean ideas on how to conduct commercial work in general. Intimate details are given as to the main objects of the organization, accomplishments achieved, under way, or contemplated, methods of financing, etc. Among the larger cities whose commercial organizations are studied at length are Houston, New Orleans, Atlanta, San Antonio, Spokane, Seattle, Portland, San Francisco, Los Angeles, Minneapolis and St. Paul. State-wide consolidated bodies, such as the California Development Board and the Associated Chambers of Commerce of the Pacific Coast, are also included.

+ +

Two Reorganizations

The possibility of producing a civic awakening in small cities under widely different conditions, was demonstrated during the past month in Petersburg, Va., and the group of towns in northern New Jersey of which Union Hill is the center.

Petersburg had a population in 1910 of 24,127, of whom 11,014 were negroes. The town of Union in 1910 had 21,023 population, with a considerable additional population in adjacent municipalities having interests in common.

In Petersburg the Chamber of Commerce had rendered a service which, in view of its limited income and the lack of city-wide support, was creditable. The total income was $4,125. It became increasingly evident, however, that the public at large must give its interest and support if the Chamber was to measure up to the needs of the city. Accordingly, a campaign of education was undertaken under the direction of Lucius E. Wilson and Samuel Wilson, of the American City Bureau. At the end of two weeks there were 340 members with a comprehensive idea as to the broad functions of the Chamber of Commerce, giving the organization an income of $8,500.

In Union Hill the old Board of Trade had gone out of existence after turning its effects over to a handful of citizens, who at once organized as the Chamber of Commerce of North Hudson. A dinner at which the Governor and Attorney-General were among the speakers, was the largest attended function of this kind ever held in North Hudson. During the next two weeks, under the leadership of Lowry W. Statler, of The American City Bureau, 450 members joined the Chamber. More significant even, several surrounding towns showed by their activity during the campaign that the advancement of the community as a whole can transcend considerations that are limited by township lines.

+ +

Smoke Abatement

ROCHESTER, N. Y.—The Smoke Abatement Committee of the Rochester Chamber of Commerce is conducting a campaign of education regarding the costliness of black smoke. As a committee of education rather than prosecution, its purpose is to arouse a strong public opinion for the abatement of the black smoke nuisance in Rochester. The committee acts as a clearing house, supplying without charge information and advice relative to the smoke abatement movement throughout the United States.

CHAMBER OF COMMERCE AUDITORIUM, FORT WORTH, TEXAS

Well lighted, heated and ventilated; excellent acoustics; modern fireproof construction; built to advance the welfare of the people of Fort Worth

HOME OF THE DULUTH, MINN., COMMERCIAL CLUB

In the window of the corner store there is a "Made in Duluth" exhibit

Industrial Survey

OMAHA, NEB.—One of the first activities of the recently appointed Industrial Committee of the Commercial Club of Omaha was to send to the business houses of Omaha the following questionnaire:

1. What are you using in your line of business that is not manufactured in Omaha, but that you think may be manufactured here to advantage?
2. Do you know of any concern manufacturing the article you suggest, that may be interested in moving to Omaha?
3. If such a concern could be induced to locate here, based on your own patronage (which we assume it would have) and your knowledge of the territory, what volume of business might they expect?
4. Would you encourage the location in our city of another house in your line, which may appear as open competition, but would tend to establish Omaha as a leading center in your line of industry? Reasons why you would favor or not favor such competition.
5. Aside from your own line of business, can you suggest any industry that Omaha does not now have which would be of advantage to have located here?
6. Do you know of any firm or company engaged in such industry that may be induced to locate here?

Answers to such questions as these, particularly when considered in connection with a pathfinder industrial survey like the one recently conducted by the Manufacturers' and Business Men's Association of Brooklyn,* give the committee first-hand knowledge of local industrial needs and, more important, indicate to the manufacturer ways for working with the Club.

Factory Development

LINCOLN, NEB.—A plan of factory development by community coöperation has been worked out by the Lincoln Commercial Club. The first point attacked is the factory itself, in all departments of which "Buy Lincoln-Made Goods" placards are posted. Informal meetings between employers and employes have also been established in the 130 manufacturing plants of the city, with favorable results. A Lincoln Manufacturers' Association has been formed and weekly luncheons instituted at which there is regularly a talk on what is being done by members to encourage the consumption of Lincoln-made goods by their employes. The retailers, in turn, have organized themselves into a boosting committee under title of the Lincoln Retail Dealers' Association.

As an auxiliary to these two organizations, 1,200 boys have been enrolled as members of a Junior and Civic Industrial League. These boys are addressed once a week at the Commercial Club on what constitutes a desirable citizen, an efficient employe, and on subjects of civic development. They also visit the factories for the purpose of receiving instruction concerning the various products and processes. Through the education of the boys it is hoped not only to secure the families as purchasers, but to develop a class of future citizens informed as to what it means to foster the home industry.

* See THE AMERICAN CITY for March, page 283.

New Building

FORT WORTH, TEX.—Through the formation of a separate company to finance and operate a Chamber of Commerce building, the Fort Worth Chamber now has a modern headquarters. Ground and building cost $135,000. The building is 100 feet by 100 feet, with façade rising 65 feet.

Upon the ground floor are the offices of the Chamber of Commerce, leased from the building corporation. In the auditorium, which has a capacity of 3,000, will be held conventions, concerts, lectures, dances, and fashion, flower, automobile and similar shows.

MEMBERSHIP CARD OF COLUMBUS, OHIO, CHAMBER OF COMMERCE

Actual size, 8 x 8 inches. It has the appearance of a bronze tablet

Chambers of Commerce and City Planning

By George B. Ford

Member of City Plan Committee of the Merchants' Association of New York

"*THE NATION'S BUSINESS*" in a recent issue, says: "A number of organizations regard their efforts in the direction of city planning as one of the most important achievements of the year." Then it goes on to cite a number of cities in which the commercial organizations have taken an important part in promoting city planning work.

A great movement for city planning has spread over the country within the past few years. The same business forethought is being applied to the community that the successful business man is applying to his own private affairs. Communities are profiting by the mistakes of the past, and planning to avoid them in the future by arranging for an orderly growth.

The various phases of the development of a community can be grouped under four heads: industries, city planning, administration and social welfare. It is obvious that the first work of the chamber of commerce is along industrial and commercial lines. After the industrial work it will be seen that city planning is the next most important work for the commercial organization to take up, because city planning, in its right interpretation, is the making of the city as a whole a better place in which to work and live. One of its functions is to provide attractions for industry, business and labor so that the community will have a prosperous and satisfactory growth.

The phases of city planning work which are directly connected with chamber of commerce work are many and include the greater part of the range of city planning. In any right city planning the first consideration is the handling of goods and of people. It includes the handling of the food supply and general freight by the railroads or along the water front or in the streets, and the handling of people on the streets, in street or rapid transit, and on the railroads. These matters are the very structure and backbone of city planning, and unless primary consideration is given to them any scheme of development for the city will be unable to stand the test of use. These problems of transportation involve studying the location and arrangement of and the approaches to railroad freight stations and passenger stations; the development of the water front, whether it be on the ocean, a bay, a river, or a canal, so that it can be used to best advantage commercially; the study of all movement of traffic in the streets so that people and goods will circulate freely without congestion and attendant loss of time and money. All of these involve, further, the cutting through of new streets to relieve congestion, the widening of old streets or the paving or grading of streets to satisfy their present or probable use, and the rerouting and rescheduling of transit lines.

City planning is also directly connected with chamber of commerce work in making the community an attractive and desirable place in which to live. It means providing better housing and better recreation facilities, better markets, even making the community more attractive in the appearance of streets, squares, parks and buildings. No matter how good the industrial features may be, unless the community is attractive to labor, a sound and healthy development is hardly probable.

It is in the development of new districts that the chamber of commerce has an especial opportunity. There is a great opportunity to avoid the mistakes of the past and to work out complete industrial, commercial and housing schemes so that property which is peculiarly suited to industrial use will be laid out in every way to facilitate such use, and land which is particularly adapted to residential use will be so laid out as to be particularly fitted to that use. It is the same principle which we find in business, of applying data gained from successful examples all over the country to the particular needs of the local problems.

The question arises as to what chambers of commerce can do to help city planning along, and what they should do first. The method of procedure is similar to that used in private business. The first thing to do is to size up the whole situation and take account of stock, an inventory if you will, and from the data thus secured lay out a program of work covering the whole range

of the field and in such an order that the most crying needs may be taken up first and the less important ones later in the order of their relative urgency. This stock-taking will provide a great amount of graphic material for publicity and will furnish the chamber of commerce with an abundant mass of "talking points" in conducting a city planning campaign. With these facts and this program before them, the city authorities will have to listen to public demand and carry on the city planning work themselves. There are many examples throughout the country where chambers of commerce have succeeded in getting things started by a method similar to this. In some cases the commercial organization and the city have divided between them the expense of the preliminary work, and then the city, with the advice of the chamber of commerce, has carried on the more detailed work itself.

Of all the organizations in a city—civic organizations, churches, women's clubs, and social organizations—the commercial organization is the one above all others which is peculiarly suited to undertake city planning work. This is because city planning is directly connected with the industrial and commercial work, which is the reason for the existence of the chamber of commerce. The savings which the manufacturer has succeeded in making by applying efficiency methods in his own plant are often canceled by his losses due to poor and congested streets and antiquated freight transportation facilities. Complete industrial and commercial efficiency is impossible in an unplanned city. Furthermore, the chamber of commerce is usually the only organization which can raise the amount of money necessary to start city planning work; and, more important still, the say-so of the successful men who compose the business organization and who are often the leading taxpayers of the community carries vastly more weight with the governing bodies of the city than do the supposedly fanciful dreams of many of the other organizations in the city.

If city planning in America is going to proceed along permanently satisfactory lines it will be because the chambers of commerce have promoted it and backed it. If they do not, most of the work which we are doing now will have to be done over again in order to make it permanently right. The commercial organizations have a great civic duty before them in directing and promoting the healthy and reasonable growth of our cities.

An Economical Device for Cleaning Catch-Basins

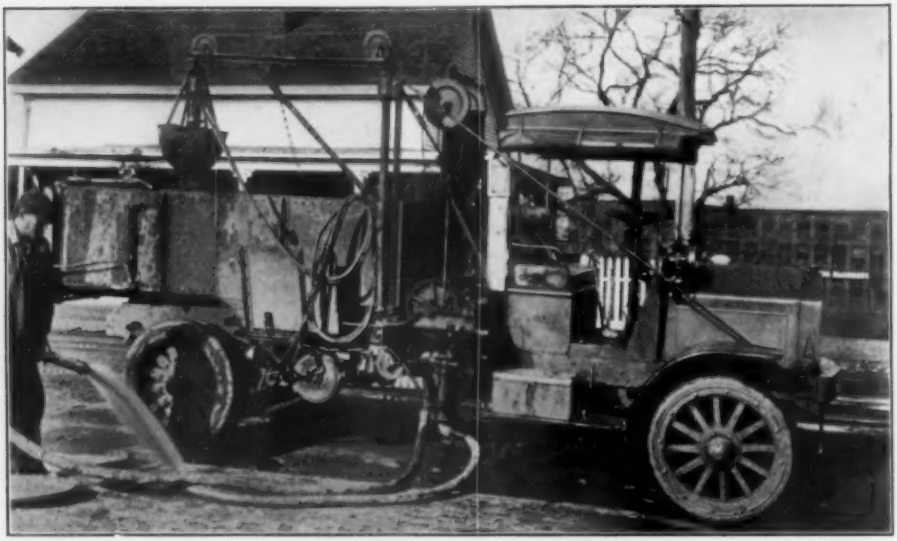
By Joseph Wood

Assistant Commissioner, Department of Public Works, Pawtucket, R. I.

THE Department of Public Works of Pawtucket, R. I., has developed an efficient piece of apparatus for cleaning catch-basins, and has thus greatly decreased the cost of the work. The whole apparatus, excepting the chassis, the body and the 2-horse-power engine, was made and assembled in our own shop by James Nisbet, mechanician in the department, working under the direction of the writer.

The device is not patented, and any city wishing to copy and use it is free to do so. It consists of a 3-ton chassis, upon which is mounted a dump body, built to our specifications and having a capacity of 89 cubic feet. In the rear of the driver's seat are mounted the hoisting machinery, the oil pump and the hydraulic lift, together with a 2-horse-power gasoline engine.

The engine draws its gasoline from the tank which supplies the motor, its exhaust goes into the muffler, and its water circulation is through the radiator, thus preventing freezing in winter while the motor is stopped during the loading of the truck. This small engine raises and lowers the bucket, pumps the oil for the opening and closing device on the bucket, and drives the 70-gallon centrifugal pump for emptying the surplus water from the basin. The hydraulic lift is operated from the motor. The bucket is of the orange-peel type, with a capacity of 1½ cubic feet, and makes two trips per minute from the basin to the truck.

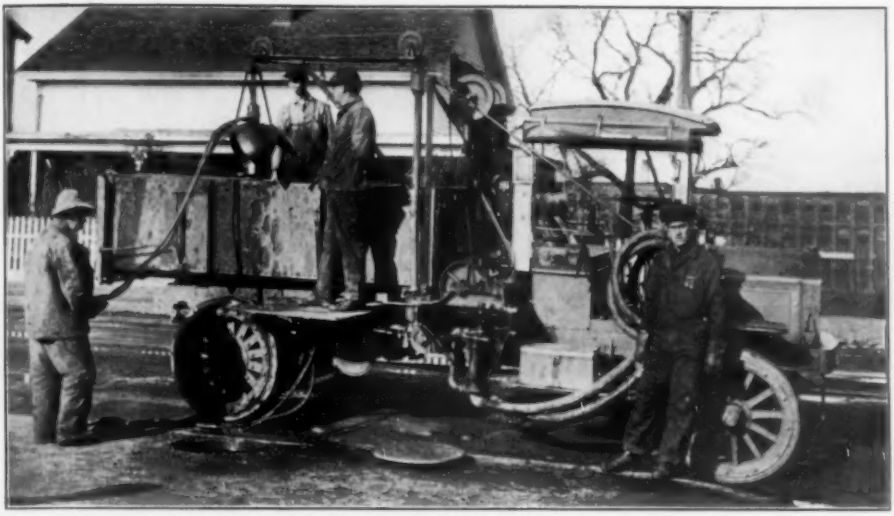


CENTRIFUGAL PUMP IN OPERATION

This outfit was first put into commission on July 17, 1913, with a plain bucket which was filled by a shoveler in the basin, and the cost per cubic yard of material hauled to the dump—an average trip of 4,000 feet—was reduced from $2 by the old horse-and-cart method to $1.05 by the new device. Four months later the orange-peel bucket was installed, and this, with further reduction in the expense of moving material from the basins, resulted in bringing the cost down to 86 cents per cubic yard—a total saving of 57 per cent.

The complete apparatus cost $4,200, and

BUCKET COMING FROM A POCKET CONTAINING LEAVES



AFTER THE BUCKET HAS DROPPED ITS LOAD

takes the place of six laborers, six one-horse carts with drivers, and one inspector, whose place is now filled by the driver of the truck. Under the old method the pay-rolls for labor amounted to $6,630 for 34 weeks, while the total cost for 52 weeks under the new method will be only $4,000. This includes pay-rolls, gasoline, oil, tires, interest, depreciation and repairs. Greater efficiency results from the fact that during the 18 weeks when the horse-drawn outfits were not at work, many basins would fill and remain clogged until work was started again; now these basins are cleaned as soon as it becomes necessary. The machine has not lost two hours since it was put into service last July.

In Figure 1 the centrifugal pump is shown in operation. The attendant is holding the discharge end of the hose, which in actual use is thrust into the trap, the water passing into the main sewer. Figure 2 shows the bucket coming from a pocket containing leaves. The writer and Mr. Nisbet are standing by the front of the machine. The operator, standing on the drop platform, raises and lowers the bucket by moving the hand lever backward and forward; near his

THE TRUCK IN DUMPING POSITION

right foot is the plunger of a four-way valve which opens the bucket when pressed by the operator's foot, and closes when the foot is removed. Figure 3 pictures the bucket after dropping its load, and in Figure 4 the truck is in dumping position with the swing door at the back open and the bucket swung to one side.

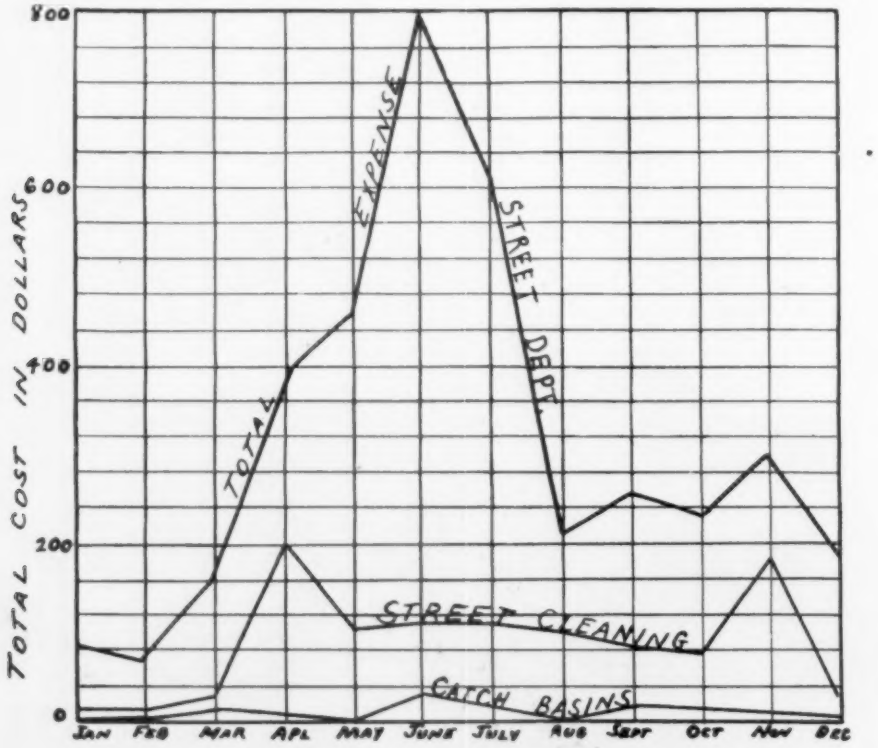
TOWN AND VILLAGE

Some Maintenance Expenses of a Small City

By Charles J. Renner, C. E.
City Engineer, St Albans, Vt.

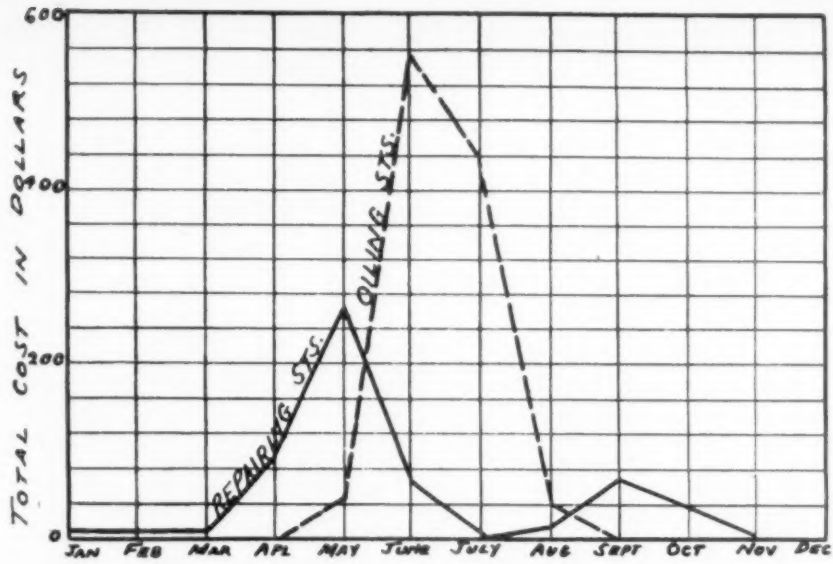
IN Vermont, near the Green Mountains, lies St. Albans, a progressive little New England city of about 6,500 population. Its tax rate is limited to two per cent of the assessed valuation. The city spends 55 per cent of its taxes on its school system. With the remaining 45 per cent it maintains efficient fire and police departments, owns and operates its own water system, builds and maintains its roads and sidewalks, and clears them in winter.

St. Albans has a council composed of a



STREET DEPARTMENT MAINTENANCE - 1913

CHART NO. 1

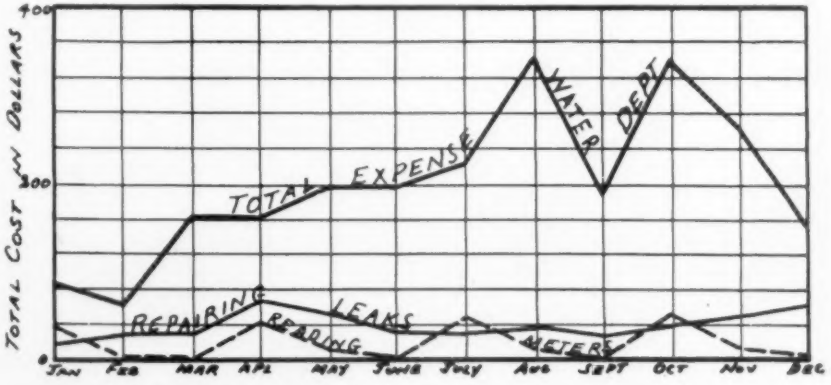


STREET DEPARTMENT MAINTENANCE-1913.

CHART NO. 2

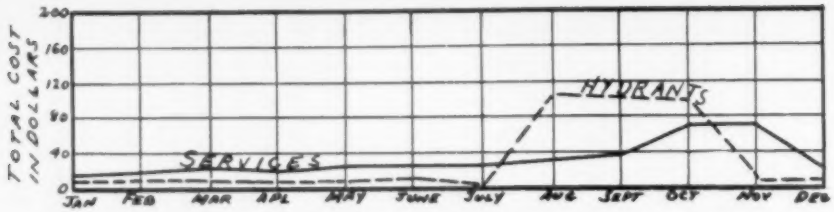
mayor and six aldermen who are chosen by the people, and who determine how and where the taxes and other revenue shall be spent. They usually apportion an amount sufficient to each department and use the surplus on new construction and improvements.

Among the necessary expenses are some of a variable nature, such as the maintenance costs. A study of the fluctuations is interesting and gives much information not generally found in print. For convenience and comparison the costs of the street and water departments are plotted on the accompanying charts. Some of the subdivisions are also shown. The charts are easily understood by noting that each horizontal line starting from the bottom represents $40 and each vertical line represents a month.



WATER DEPARTMENT MAINTENANCE-1913.

CHART NO. 3



WATER DEPARTMENT MAINTENANCE · 1913

CHART NO. 4

By observing Chart No. 1 for the street department, it is seen that the total expense was lowest in February, after which it rose rapidly, reaching its maximum in June. Chart No. 2 shows that most of this maximum expense was for oil and oiling the streets. The two rises in the street cleaning line (Chart No. 1) represent the spring and fall cleanings, when roads were hoed and scraped. The other lines show that a good portion of the work of May was repairing streets, and that the catch basins and drainage received special attention in June. St. Albans has 20 miles of streets, which cost about $137 a mile to maintain during 1913. Six miles of streets were oiled.

Charts Nos. 3 and 4 show the principal expenses of the Water Department. From them it is seen that meters are read four times a year, and that leaks are the most troublesome in the spring, when the frost comes out of the ground. The rise in the leak line in November and December was due to two large breaks in the mains. Six new hydrants were installed during August, September and October. The "Total Expense Water Dept." line is not so typical as the one for streets, because the sudden rises for some of the months were due to purchases of stock material, used throughout the year. It may be noticed that these buying spells usually came, or immediately followed, meter reading times, for then the curb boxes and other water fixtures were inspected and repaired, as well as the meters.

Interesting charts for other department expenses could be made similar to the above, but it is hoped enough have been given to show where the greater portion of the money is spent after the schools have been taken care of, and to form a basis of comparison.

How an Ohio Village Controls the Vagrancy Problem

By R. R. Newbold

IN view of the present agitation in regard to vagrancy and unemployment, the experience of the village of Oxford, Ohio, in dealing with the problem is suggestive as one way of getting at the real situation.

The citizens of Oxford believe that they have solved the tramp problem, without expense to themselves and without violating their ideals of charity. Except for a needy minority who are willing to work, tramps give Oxford a wide berth. The former earn some assistance and pass on.

Oxford is a college town with a population of 2,500. Last year, on the colder nights, 25 or 30 tramps were given shelter at the city lockup each night; an average of 11 each night were provided for during the winter months. This necessitated the use of about 25 extra bushels of coal each

month, and every morning a gang of beggars was turned loose on the community. The citizens protested. They had no objection to helping men who were temporarily, or even perpetually, out of work, if the men were willing to help themselves, but they believed that their charity was being exploited. Oxford had become a favorite stopping place for tramps because of the excellent sleeping accommodations in the village lockup and the considerate treatment given.

The Mayor suggested a system of handling the situation, and put it into operation. Applicants for aid were given a night's shelter and breakfast in return for two hours of their time the next morning. A stone pile was provided in the lockup yard, and a pile of stone weighing about 800 pounds was measured out to each applicant for aid. For several mornings after the introduction of the stone pile treatment the City Hall was the center of interest because of the noise of breaking stones. But the sound gradually diminished in volume. From February 1 to February 10 only 3 tramps applied for municipal aid in Oxford, and the numbers seen in the village decreased almost proportionately. The citizens were requested to send all applicants for food to the Mayor, but very few took advantage of the offer of opportunity to earn a meal. This plan has reduced the total number of vagrants in the village from over 400 last year to less than 50 for a similar time this year.

This system of handling vagrants pays for itself. At a nearby inn the village obtains food, plain but sufficient in quantity, at a cost of a little less than 20 cents per man. The two hours' work on the stone pile covers the expense to which the village is put. The Mayor found that supervision was necessary to get anything like good work out of his guests, but to have some village official present at the City Hall for two hours each morning was no inconvenience. When the number of lodgers had decreased, some of them were given janitorial work around the City Hall, and occasionally a business man offered odd jobs.

As to whether or not the situation throws any light on the general problem of vagrancy, the Oxford citizens do not know. But the problem of the village has been solved.

THE STONE PILE IN OXFORD, OHIO, WHERE VAGRANTS EARN THEIR LODGING AND BREAKFAST

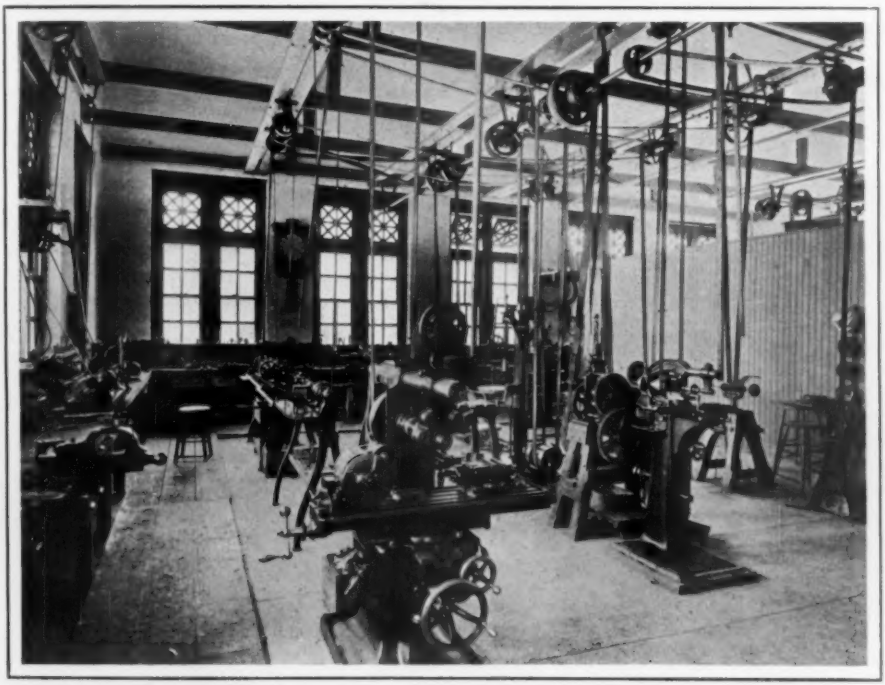
Modern Housing for Fire Alarm Apparatus

By George R. Babcock
Superintendent Electrical Department, Oakland, California

LITTLE attention is paid to the proper housing of fire alarm apparatus. The central station is usually in some out-of-the-way location, such as the top floor of an engine house or public building, and little regard is paid to the very important functions it should be continuously ready to perform. A central station so situated and housed that it is menaced by the very fires of which it is supposed to give timely warning, is of but little real value. The means of communication between the fire box, central station and engine houses is deserving of as much care and protection as any other part of the system. This vital point is recognized by engineers who have

DEPARTMENT OF ELECTRICITY, FIRE ALARM SYSTEM, OAKLAND, CAL.

THE BATTERY ROOM



THE TOOL ROOM AND REPAIR SHOP

THE OPERATING ROOM

made a study of fire prevention and the proper housing of fire-fighting apparatus.

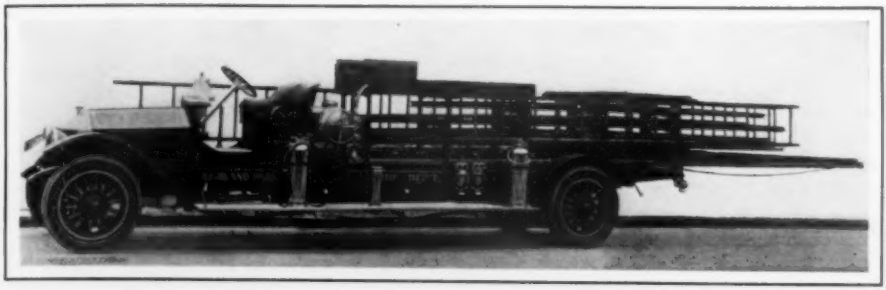
The result of this study is shown in the building recently completed in Oakland, Cal., where the central station apparatus is housed in an isolated, fireproof steel and stone building of classic design, erected for this purpose in one of the city parks. The building is a single story with deep basement. The outer walls are of Utah sandstone, cream white, soft and easy to work, but of a quality that hardens on exposure. The door and also the window frames are made of metal, the latter filled with heavy wire-mesh glass. The roof and floors are concrete, with a mosaic finish on the latter.

All the fire alarm apparatus in the building is mounted on steel, no wood or inflammable material being used. The equipment is of the Gamewell type. The storage battery is situated in the basement, and mounted on metal racks. All wires from battery to board are in conduit, and in the case of the main signal lines, in lead-covered cable.

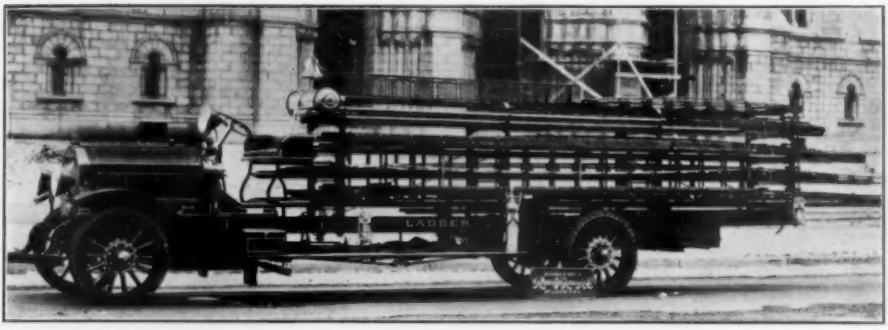
A large room on the main floor of the building is equipped with modern tools of sufficient number and variety to enable a great deal of high class work to be turned out. Such things as horse releases, tape registers, gongs, fire boxes, police boxes, automatic switches, and other pieces of apparatus are either made or repaired in this shop.

Good practice re,uires also the proper protection of the system of wires and cables connecting with the engine houses and other important elements of the fire department. To leave them exposed to the hazard of weather and other causes of disruption is as poor judgment as to have no proper center of reception and distribution. In Oakland, as far as practicable, all such wires have been placed underground, and the extensions planned will ultimately cover the entire plant.

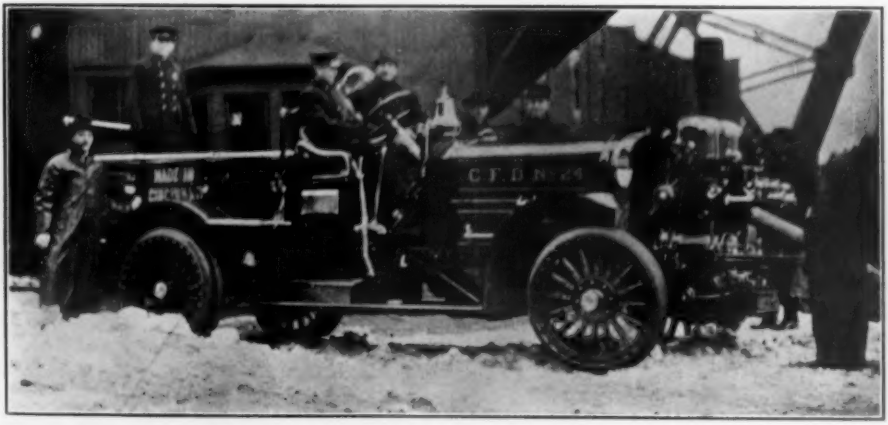
Municipal Fire-Fighting Apparatus



BOYD CITY-SERVICE TRUCK, USED IN HIGHLAND PARK, MICH.



ROBINSON HOOK AND LADDER TRUCK, IN SERVICE AT SOMERVILLE, N. J.



AHRENS-FOX FIRE ENGINE DELIVERED TO CLEVELAND, OHIO

State and Provincial Leagues of Municipalities

Suggestions from, and Articles by, Representatives of These Organizations

Has Your City These Maps?

By William P. Capes

Secretary, New York State Conference of Mayors and Other City Officials

THE administration of any city may teem with virtue, fidelity and honesty, but unless its endeavors rest upon basic facts showing conditions and indicating tendencies, it is likely to sink into oblivion—and deservedly so—for lack of efficiency. The need for basic investigation and study is pressing the public official on all sides, and as urban life grows more complicated and thereby forces to the front the necessity for practical city planning, the urgent need for fundamental facts in reference to every municipal activity will become greater. The time has passed when city administrations can decide questions of development and make changes in policy on guesses.

Every city has a map showing its boundaries, its streets and its trolley, water and sewer systems; a few have ward maps showing the location of individual real estate holdings. These for a long time have been regarded as absolutely necessary in every city engineer's office. Except for these, however, it is impossible to find in the archives of most municipalities the other important maps that every administration should have spread before it at every meeting at which are discussed or made plans for some city improvement or development.

The Advisory Committee of City Planning Experts of the New York State Conference of Mayors is bringing to the attention of the municipalities of the state the advantages of compiling basic information by means of maps. In order to start the officials to thinking about the compilation of a complete map record and at the same time to ascertain how far each city has progressed along these lines, the committee has prepared a map questionnaire and has sent it to each mayor. Among the questions asked are these:

Has your city a map showing the population growth from period to period by wards or election districts?

Has a "resident" map been made, showing the location and extent of your residential districts, including types of houses?

Has a "place of work" map of your city been made, showing the location of industries and other enterprises giving employment?

Has your city a map of the surrounding territory, showing the relation of the municipality to its surroundings?

Has your city on file a topographical survey, including the city and surroundings, made by the United States Geological Survey?

Has your city a map showing the location and general boundaries of its business, manufacturing and residential districts?

Have you fire prevention maps, showing the location of all fire houses, hydrants, fire alarms, etc.; also another map on which a record of fires is kept?

Has your city a tree map?

Have you street and sidewalk paving maps?

Have you a map showing the exact location in the streets of all underground pipes and conduits?

A street accident map?

A juvenile delinquency map?

A map of commercialized amusements?

A map of public recreational facilities?

Has your city a map showing transportation facilities as follows: (a) Location of all existing or proposed railroad, passenger and freight terminals; (b) railroad lines within the limits of the city and its environments; (c) at each street crossing whether the railroad crosses at grade, overhead or under the street; (d) existing or proposed local street car lines or tracks, indicating whether they are single or double-track lines, and indicating also the lines or tracks of each operating company separately; (e) location of any interurban street railway running into or through the city?

Has your city a map on which are located all public buildings?

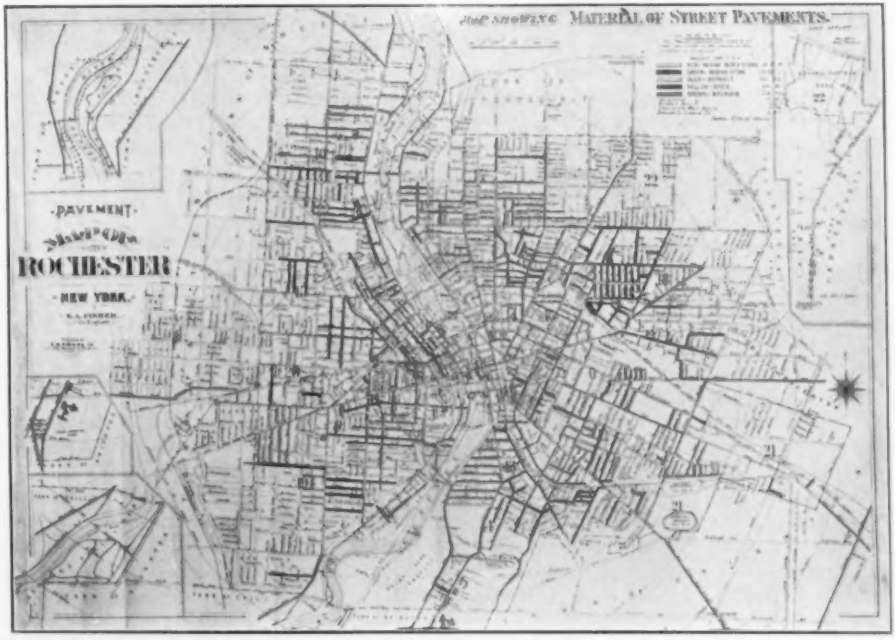
Has your city a map on which have been plotted tuberculosis cases for the last two years?

It must be admitted that any city which at present has none of these maps and which undertakes to compile this series, has a good-sized task to perform. Nevertheless, by distributing skeleton maps among the various departments which have the information and which are equipped to tabulate it, the completion of the work should not take long. At the same time, by dividing the responsibility in this way, no department or bureau should be hampered by the extra work of initial preparation and of thereafter keeping the maps up to date. The time saved by having the data at hand for immediate reference when deciding vital problems and questions of policy should be much more than that occupied in preparing the maps and keeping them up to date.

The advantages to be gained by having for ready reference a set of maps like or similar to those suggested are threefold:

1. The use of such maps prevents much guesswork in the administration of city affairs. Every map is a guide post. The solution of a problem or the establishment of a policy can be based on a knowledge of facts—past occurrences, present conditions and tendencies. When the question arises of providing improvements for a section not thickly populated, it is important for officials to know the population, growth of the city and the direction in which the residential, industrial and commercial districts have been and are spreading. With maps before them showing these facts, officials should be able more quickly and more accurately to reach a decision.

2. By means of adequate maps a city administration may study any problem under consideration in relation to other problems of a different nature but somewhat related. Take the juvenile delinquency map, for example. This shows not only where truancy is flagrant, but a study of it and the "place of work" and the "residential" maps should indicate to the park department also where



PAVEMENT MAP OF ROCHESTER

On this map, prepared by E. A. Fisher, City Engineer, each kind of pavement is indicated by a different color. On January 1, 1914, the city had 274 miles of streets, the principal paving materials being asphalt (102 miles), brick (67 miles), macadam (26 miles), and medina stone (30 miles, of which 17 miles is block).

playgrounds are needed. It is as important that the building department should study the tuberculosis map as it should be for the health department constantly to watch it. The "place of work" map should be at the call not only of those who decide upon the adequacy of traction facilities, but also of those who have charge of the care, paving and lighting of streets, the fire department and the health department.

3. An administration is enabled to study the needs of any section of the city in relation to the needs of all other sections, thereby making it easier to develop a practical city plan.

Thus by coördinating the development work in all sections, increasing and fostering coöperation between departments, preventing guesswork and delays resulting from insufficient or unreliable information and making possible practical city planning, a series of maps giving basic information makes for efficiency in municipal work and thereby becomes a good investment.

Relation of the Motor Bus to Urban Development

By F. Van Z. Lane
Consulting Traffic Engineer, New York

MODERN pavements and the development of the automobile are rapidly making available in America a new means of transporting people within cities, from city to city, between the country and the city, and in the country itself.

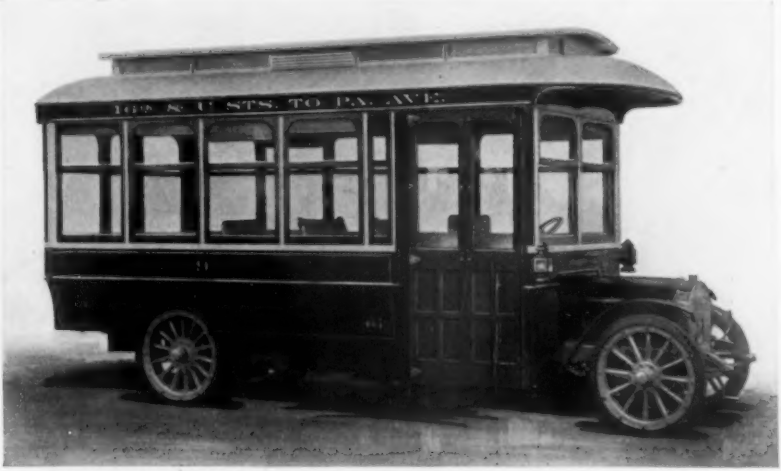
There can be no question now that the automobile omnibus—or the "motor bus," as it is more popularly known—is destined to play a more and more important part in the transportation field and hence in the development of the city and of the country; for transportation is fundamental in city and country development.

As was the case in the first kind of passenger transportation of which there is any record—the stage coach propelled by animal power—so also does this latest form of successful transportation depend for its greatest efficiency to a very large extent on the condition of the streets and highways. Uneven pavements and rough roads are not conducive to successful motor bus operation; but if even pavements and smooth roads prevail, the motor bus presents a means of passenger transportation not only swift and reliable, but enjoyable to a degree unequaled by any other means of land transportation. And surely if a form of traveling about cities is at hand that is actually enjoyable, that form of transportation deserves serious consideration.

Because of this enjoyable feature many persons do not seriously consider the motor bus method of transportation as capable of performing a real transportation service, but look upon it simply as providing an inexpensive means of joy-riding. Even if this were the only function of the motor bus, it should receive favorable comment, for anything that for an inconsiderable outlay per person will contribute to the entertainment of a city's population is certainly worth the city's attention. Without considering this feature, however, the motor bus is capable of taking a real place in the transportation system of the city and of the country.

The motor bus is particularly adaptable in a city where certain well-built-up sections exist through which it would be undesirable to operate surface cars, elevated lines or subway trains. Almost every city has restricted sections where such methods of transportation are prohibited because of their noise and unsightliness, and where the condition of the roadways is particularly adapted to successful motor bus operation. Without this means of transportation such sections are usually cut off from easy connection with the business, shopping and amusement sections of the city, as well as from other residential sections.

Motor busses require no permanent structures in the street for their operation, and it is only when the busses are seen that there is any indication of an existing transportation line. Indeed, they can be so con-



SIXTEEN-PASSENGER OMNIBUS OPERATED IN WASHINGTON, D. C.

structed as to be an ornament to any street. At the same time their operation can be made so dependable that the bus is passing the door when it is expected. There can be no question that such a means of transportation will enhance the value of property along these restricted thoroughfares.

There are also sections of cities through which cars or trains are now operating, but which cannot distribute the people residing in those sections directly where they desire to go. In such cases motor busses are a desirable supplementary means of transportation.

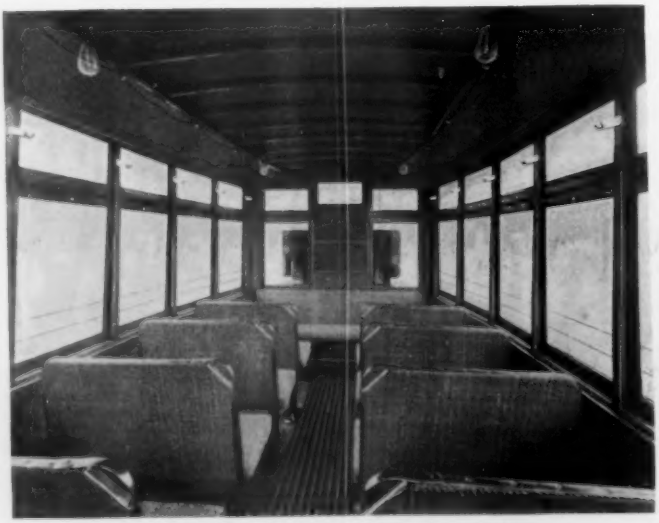
The surface car tracks in certain sections of many of our American cities are so congested that it is becoming impossible to operate any more cars over them, and it often happens that there are no other parallel streets in which more tracks can be put down to relieve the situation. Motor bus operation also presents a very good possible solution of this problem, because although the track capacity of a certain street may have been reached, there are very few streets where the roadway capacity has been reached.

The motor bus, together with the good roads movement, can undoubtedly perform an important and long-desired service in

TWENTY-SIX-PASSENGER OMNIBUS OF THE NEW YORK STATE RAILWAYS

Operated in the vicinity of Utica as a feeder to the railroad lines

FORTY-FIVE-PASSENGER OMNIBUS ON FIFTH AVENUE, NEW YORK



INTERIOR OF THE FIFTH AVENUE OMNIBUS

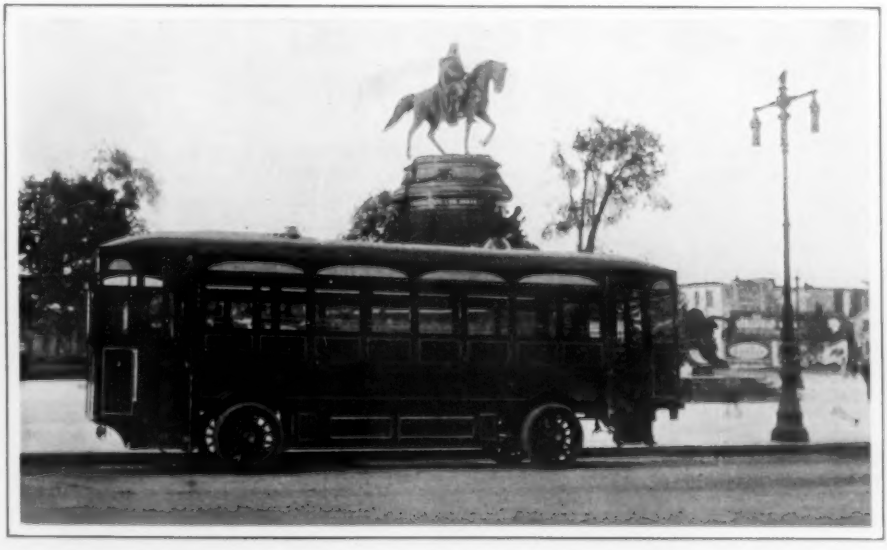
This cut and the two on page 463 by courtesy of The J. G. Brill Company

Courtesy of the Packard Motor Car Company

ONE OF THE MOTOR BUSSES OPERATED BY THE CITY OF DETROIT IN BELLE ISLE PARK

connecting up the suburbs and country districts with other such districts and with the cities. In the first place, the capital investment is much smaller than for any other form of transportation; and in the second place, if the system is not a success the route can be changed to a more successful one without additional capital or without abandoning anything of value—or the entire operation can be abandoned and the busses used to advantage in some other section miles away without the serious financial loss that would result if permanent structures were necessary to carry on an operation.

Motor busses can also be used to good advantage in extending existing transportation facilities. It may be that existing trolley lines should be extended to afford transportation to districts just beyond the ends of present lines, but that there is hardly enough patronage at the present time to warrant the capital outlay necessary to extend the tracks, overhead wires, poles, feed-



ELECTRIC MOTOR BUS

ers, increase in power plant, shops, barns, etc. The system, however, can be extended by using motor busses, thus avoiding additional capital outlay for fixed and permanent structures until such time as the district is built up to sufficient population density to warrant such expenditure.

Almost every city and its surroundings now have parks, boulevards or drives, frequently extending for miles, on which it would be desirable to have some kind of cheap transportation. Without the motor bus the pleasures and delights afforded by a ride through such section are restricted to those who can afford to own their conveyances or to rent them at high prices. Street cars or elevated trains are out of the question, because such thoroughfares then lose their attractiveness. Here, then, is another opportunity for the motor bus to perform a distinct transportation service.

The motor bus is superior in many respects to any other existing methods of transportation. It provides more direct door-to-door transportation. It can be operated with a greater average speed than the surface car and is superior to subway or elevated train transportation in that the ride is on the street surface, with no long flights of stairs to climb, no long walks to stations and no tickets to buy. But the transportation is more elastic and flexible than any other means of transportation yet devised, in that each bus is a transportation unit in itself, and the whole system is not dependent on the successful operation of each one of these individual units. The failure of one bus does not tie up the whole line, and if something happens on one part of the route to interfere with all bus operation at that point, the whole system is not tied up, because busses can immediately be diverted and the whole operation kept going. It has also been proved that busses can be operated in a large city with the regularity, frequency and dependability of surface car and train operation and with less danger to passengers and other existing traffic.

As transportation is fundamental in the upbuilding of cities and of the suburbs and the country districts, it would seem that the motor bus is not only a convenience, but also a necessity in such upbuilding.

The foregoing article by Mr. Lane will be supplemented in subsequent issues by facts and figures from cities in which motor busses are in successful operation. Data and photographs for use in this connection will be welcome.

Area, Assessed Valuation and Tax Levies of 195 Cities

THERE has been issued by the Bureau of the Census, as Bulletin 118, a report of the financial statistics for the year 1912 of the 195 cities having a population of over 30,000. The following figures, taken from this report, are of special interest as indicating the wide variation which exists in the basis of assessment for purposes of taxation.

The assessed valuation of property is subdivided in the report so as to show real property, personal property and other property subject to the general property tax, and also that subject to special property taxes; the totals only are here given.

For most cities the figures shown in the table as the reported basis of assessment in practice are estimates furnished to the Census Bureau by local officials. The figures aim to show the percentage which the assessed valuation of property subject to the general property tax in those cities forms of its true value, but in most cases are believed to be far from correct.

The rates of levy given for the general property tax are those per $1,000 of assessed valuation and per $1,000 of reported true valuation. If property is taxed at two or more rates, the figures represent the average rates on the basis of the assessed valuation of property within the city corporation. The rates based on the estimated true value are, of course, subject to any errors which may exist in the reported basis of assessment.

City.	Population Estimated as of July 1, 1912.	Area in Acres, July 1, 1912.	Assessed Valuation of Property.	Reported Basis of Assessment.		Tax Rate for City Purposes.		Per Capita Levy of Property Taxes.
				Real Property (Per cent).	Personal Property (Per cent).	Per $1,000 Assessed Valuation.	Per $1,000 Estimated Valuation.	
New York	5,064,237	(2)	$9,177,495,629	100	100	$18.34	$18.34	$30.72
Chicago	2,294,711	122,448.3	940,450,171	25	25	41.21	10.30	16.96
Philadelphia	1,606,102	84,933.0	1,556,323,614	100	100	14.76	14.76	14.30
St. Louis, Mo	712,027	39,277.0	652,261,285	60	40	18.88	11.33	17.35
Boston, Mass	711,128	30,295.0	1,489,608,820	100	100	14.93	14.93	31.31
Cleveland, Ohio	596,970	29,469.0	756,831,185	100	100	13.15	13.15	16.78
Baltimore, Md	569,560	20,255.0	723,800,340	100	100	13.69	13.69	15.53
Pittsburgh, Pa	550,667	26,666.7	749,583,440	95	95	19.61	18.63	26.69
Detroit, Mich	503,445	26,572.6	452,255,100	75	100	21.40	16.05	19.22
Buffalo, N. Y	439,666	26,983.0	371,582,942	75	75	28.04	21.03	21.45
San Francisco, Cal	433,488	81,280.0	510,429,316	50	20	20.50	10.25	24.14
Milwaukee, Wis	400,279	15,607.9	460,548,763	90	90	14.89	13.40	17.14
Cincinnati, Ohio	387,543	42,464.0	525,826,770	100	100	14.39	14.39	19.57
Los Angeles, Cal	386,014	68,877.0	330,934,480	50	25	18.70	9.35	16.03
Newark, N. J	369,317	14,976.0	383,864,182	100	100	17.84	17.84	18.54
New Orleans, La	350,695	169,323.0	235,564,586	75	75	22.00	16.50	14.78
Washington, D. C	342,776	44,316.9	359,932,253	67	100	15.00	10.00	15.75
Minneapolis, Minn	323,476	33,920.0	252,089,279	50	30	23.46	11.73	17.60
Jersey City, N. J	281,497	12,288.0	257,644,605	100	100	13.86	13.86	12.69
Seattle, Wash	277,420	60,466.0	212,929,048	45	45	20.18	9.08	15.53
Kansas City, Mo	265,977	38,193.0	178,820,427	50	50	23.02	11.51	15.47
Indianapolis, Ind	246,928	21,658.7	218,048,140	60	60	15.90	9.54	14.04
Providence, R. I	235,222	11,700.2	313,063,860	100	100	12.69	12.69	16.89
Portland, Ore	234,546	33,205.0	298,941,430	60	70	14.30	8.58	18.44
Rochester, N. Y	230,414	13,351.5	206,451,956	80	80	20.35	16.28	17.19
Denver, Col	230,249	37,600.0	133,987,715	50	50	30.77	15.38	17.90
Louisville, Ky	229,323	15,871.0	192,414,861	70	70	17.90	12.53	15.02
St. Paul, Minn	226,300	35,480.0	167,423,292	60	30	17.20	10.32	12.17
Columbus, Ohio	193,822	14,061.7	247,576,390	100	100	10.82	10.82	13.83
Toledo, Ohio	176,698	18,265.6	223,939,440	100	100	11.08	11.08	14.07
Oakland, Cal	167,401	38,561.0	116,881,725	50	50	22.70	11.35	15.85
Atlanta, Ga	167,041	16,428.0	154,827,487	60	60	12.50	7.50	11.59
Worcester, Mass	152,150	24,634.0	153,883,558	100	100	14.80	14.80	14.98
Birmingham, Ala	150,249	30,912.0	85,119,638	50	50	10.00	5.00	5.67
Syracuse, N. Y	143,602	11,583.6	151,068,969	85	90	16.63	14.14	16.36
New Haven, Conn	139,325	14,340.0	139,779,146	90	90	16.12	14.51	16.18
Memphis, Tenn	137,469	12,719.0	110,519,277	60	40	15.80	9.48	12.70
Scranton, Pa	135,894	12,508.9	81,555,630	80	80	15.41	12.33	9.25
Richmond, Va	131,453	7,028.0	148,768,790	75	75	14.00	10.50	15.84
Paterson, N. J	130,167	5,357.0	100,052,522	100	100	11.42	11.42	8.78
Omaha, Neb	128,912	15,680.0	32,749,722	20	20	65.60	13.12	16.67
Fall River, Mass	122,521	26,156.0	97,935,957	100	100	16.48	16.48	13.21
Spokane, Wash	120,994	25,120.0	89,799,772	42	42	17.50	7.35	13.03
Dayton, Ohio	120,364	10,637.0	150,005,610	100	100	10.40	10.40	13.02
Grand Rapids, Mich	118,163	11,040.0	89,197,915	75	75	15.05	11.29	11.36
Nashville, Tenn	112,744	11,648.0	77,161,306	75	75	14.76	11.07	10.10
Bridgeport, Conn	108,999	11,426.0	97,683,477	100	100	14.70	14.70	13.17
Lowell, Mass	108,768	9,098.0	84,792,243	100	100	16.41	16.41	12.81
Cambridge, Mass	107,734	4,180.8	111,581,235	100	100	17.61	17.61	18.24
San Antonio, Tex	106,295	23,040.0	88,674,375	80	80	14.80	11.84	12.35
New Bedford, Mass	104,302	20,873.0	101,744,559	100	100	16.77	16.77	16.39
Hartford, Conn	103,177	11,065.6	138,060,842	80	80	19.92	15.94	22.16
Dallas, Tex	102,690	10,606.9	89,430,575	60	60	18.20	10.92	15.85
Trenton, N. J	102,071	4,903.0	72,050,589	100	100	14.30	14.30	10.04
Albany, N. Y	101,726	10,070.1	103,792,737	90	75	16.59	14.93	15.85
Salt Lake City, Utah	101,207	31,188.7	62,288,818	33	40	22.70	7.57	13.97
Reading, Pa	99,896	4,122.0	54,958,975	75	75	14.00	10.50	7.70
Camden, N. J	98,697	5,029.5	56,778,458	100	100	13.40	13.40	7.18
Springfield, Mass	94,933	24,661.0	151,960,100	100	100	13.61	13.61	21.94
Tacoma, Wash	94,067	27,920.0	73,299,008	60	60	17.48	10.49	13.78
Lynn, Mass	93,991	7,248.0	81,529,354	100	100	16.62	16.62	14.44
Des Moines, Ia	91,785	35,309.2	22,684,473	25	25	67.70	16.92	16.73
Lawrence, Mass	91,108	4,577.0	75,493,314	100	100	15.05	15.05	12.47
Wilmington, Del	89,849	6,515.0	57,390,838	80	80	15.12	12.10	9.68
Kansas City, Kan	89,008	10,364.0	90,367,010	100	100	12.24	12.24	12.64
Yonkers, N. Y	86,929	11,840.0	87,000,771	100	100	24.72	24.72	22.95
Youngstown, Ohio	86,557	7,142.0	137,272,100	100	100	7.51	7.51	11.91
Houston, Tex	86,316	10,171.5	77,294,351	40	40	17.00	6.80	15.22
Fort Worth, Tex	84,427	10,607.0	62,451,780	55	55	19.30	10.62	14.28
Duluth, Minn	84,168	43,116.8	47,507,603	50	33	29.00	14.50	15.20
Norfolk, Va	83,470	5,966.6	63,881,180	75	40	15.68	11.76	12.11
Oklahoma City, Okla	83,194	11,440.0	95,173,338	75	75	13.00	9.75	15.42
Schenectady, N. Y	82,103	5,075.0	56,828,899	92	80	20.39	18.76	13.51
Somerville, Mass	80,723	2,700.0	69,632,540	100	100	16.45	16.45	14.19
St. Joseph, Mo	80,188	8,880.0	39,215,020	50	50	24.00	12.00	11.81
Utica, N. Y	78,429	7,708.8	56,103,838	70	70	22.37	15.66	13.64
Elizabeth, N. J	78,135	6,230.0	60,210,102	100	100	11.04	11.04	8.51
Waterbury, Conn	78,061	18,048.0	69,204,926	90	75	15.06	13.55	13.26
Troy, N. Y	77,204	6,035.2	63,011,733	98	98	23.87	23.39	18.72
Akron, Ohio	74,957	7,347.0	93,967,200	100	100	10.30	10.30	12.91
Manchester, N. H	72,987	21,700.0	65,118,287	100	100	12.04	12.04	10.74
Hoboken, N. J	72,774	1,220.0	69,496,462	100	100	12.16	12.16	11.62
Wilkesbarre, Pa	70,544	3,433.0	50,473,882	60	60	12.75	7.65	9.12
Erie, Pa	69,608	4,960.6	26,068,062	50	60	22.99	11.50	8.61

(2) Not reported.

City.	Population Estimated as of July 1, 1912.	Area in Acres, July 1, 1912.	Assessed Valuation of Property.	Reported Basis of Assessment.		Tax Rate for City Purposes.		Per Capita Levy of Property Taxes.
				Real Property. (Percent).	Personal Property (Percent).	Per $1,000 Assessed Valuation.	Per $1,000 Estimated Valuation.	
Evansville, Ind.	69,604	5,440.0	$38,510,400	65	50	$19.70	$12.80	$10.90
Peoria, Ill.	68,554	6,020.0	22,084,481	33	33	50.90	16.97	16.70
Fort Wayne, Ind.	67,890	6,292.0	35,220,470	50	40	18.70	9.35	9.70
Harrisburg, Pa.	66,971	5,540.7	47,577,399	60	60	16.75	10.05	11.90
Savannah, Ga.	66,029	4,300.0	51,488,818	75	75	13.90	10.42	10.84
East St. Louis, Ill.	64,296	7,850.0	13,311,411	30	30	45.99	13.80	9.98
Jacksonville, Fla.	64,245	7,900.0	55,834,360	80	80	11.32	9.06	9.84
South Bend, Ind.	61,296	9,318.4	28,290,570	40	40	22.40	8.96	10.34
Terre Haute, Ind.	60,977	5,468.0	33,763,845	60	60	19.12	11.47	10.58
Passaic, N. J.	60,809	2,087.7	37,516,260	100	100	9.50	9.50	5.86
Johnstown, Pa.	60,762	3,197.3	19,233,820	50	50	23.04	11.52	7.29
Bayonne, N. J.	60,649	3,938.0	48,828,025	100	100	14.77	14.77	11.89
Brockton, Mass.	60,637	13,798.4	49,981,748	100	100	17.00	17.00	14.02
Portland, Me.	60,455	14,825.1	67,093,268	80	100	16.22	12.98	18.03
Holyoke, Mass.	60,418	14,585.0	57,526,680	100	100	13.77	13.77	13.13
Charleston, S. C.	59,509	3,276.8	19,742,774	50	50	27.75	13.88	9.21
Wichita, Kan.	59,222	12,830.0	63,880,157	100	100	15.50	15.50	16.72
Allentown, Pa.	57,090	3,815.0	36,301,021	80	80	11.40	9.12	7.25
Springfield, Ill.	54,979	5,504.0	17,382,465	33	33	35.10	11.70	11.30
Covington, Ky.	54,648	3,093.0	27,850,276	75	50	17.50	13.13	8.92
Altoona, Pa.	54,451	2,114.6	25,007,408	60	60	20.00	12.00	9.19
Pawtucket, R. I.	54,391	5,725.0	52,198,355	100	100	14.98	14.98	14.38
Canton, Ohio	54,000	5,964.0	60,429,260	100	100	9.30	9.30	10.44
Mobile, Ala.	53,647	11,200.0	32,216,959	60	60	11.00	6.60	6.61
Sacramento, Cal.	53,340	8,894.0	63,176,320	60	40	16.49	9.89	19.53
Saginaw, Mich.	52,334	7,897.1	27,245,669	66	66	24.60	16.24	12.81
Sioux City, Ia.	51,118	28,645.0	9,590,008	25	25	63.70	15.92	11.95
Binghamton, N. Y.	50,409	6,400.0	34,875,515	82	82	17.25	14.14	11.18
Atlantic City, N. J.	50,244	3,060.0	88,171,200	100	100	14.16	14.16	24.85
Rockford, Ill.	49,491	6,159.0	19,701,707	33	33	35.56	11.85	14.25
Little Rock, Ark.	48,710	5,820.0	31,373,900	50	33	12.00	6.00	7.85
Augusta, Ga.	48,660	6,196.0	32,360,077	67	67	12.50	8.33	8.31
Springfield, Ohio	48,568	7,223.0	50,105,900	100	100	10.50	10.50	10.87
Lancaster, Pa.	48,517	2,560.0	25,852,390	60	60	13.00	7.80	6.93
Pueblo, Col.	47,975	7,308.8	16,768,073	50	50	33.86	16.93	11.83
New Britain, Conn.	47,430	8,438.5	40,592,672	100	100	13.69	13.69	11.58
Chattanooga, Tenn.	47,339	3,231.8	28,598,222	60	100	16.50	9.90	9.97
York, Pa.	47,206	2,200.0	24,901,571	60	60	15.00	9.00	7.91
Malden, Mass.	46,805	3,072.0	40,617,596	100	100	16.47	16.47	14.30
Berkeley, Cal.	46,558	10,720.0	38,812,245	60	60	13.40	8.04	11.17
Bay City, Mich.	46,153	7,072.0	18,119,690	75	75	24.44	18.33	9.60
Haverhill, Mass.	45,665	22,000.0	37,051,095	100	100	16.46	16.46	13.40
Topeka, Kan.	45,478	5,652.0	52,160,655	90	90	13.10	11.79	15.04
Salem, Mass.	45,427	5,250.0	37,293,231	100	100	15.10	15.10	12.40
Lincoln, Neb.	44,873	4,891.2	9,498,467	20	20	65.00	13.00	14.14
Davenport, Ia.	44,766	5,280.0	24,283,260	50	50	28.53	14.26	15.54
El Paso, Tex.	44,645	5,836.8	32,250,450	60	60	19.40	11.64	14.02
San Diego, Cal.	44,470	47,323.1	49,068,148	40	33	20.31	8.12	22.41
Tampa, Fla.	44,428	7,680.0	25,643,737	60	60	16.21	9.73	9.36
McKeesport, Pa.	44,413	2,240.0	24,302,800	55	55	18.75	10.31	10.26
Flint, Mich.	44,322	8,346.0	23,555,106	70	70	14.90	10.43	7.92
Kalamazoo, Mich.	42,798	5,307.0	22,436,570	50	50	17.42	8.71	9.21
Racine, Wis.	42,585	3,840.0	26,552,448	50	50	16.39	8.20	10.22
Superior, Wis.	42,462	27,000.0	23,739,502	70	60	20.93	14.65	11.70
Wheeling, W. Va.	42,257	2,050.0	61,851,235	100	100	6.43	6.43	9.40
Macon, Ga.	41,364	5,310.0	25,358,761	75	75	12.50	9.38	7.66
Newton, Mass.	41,195	11,406.0	80,132,445	100	100	15.06	15.06	29.30
Butte, Mont.	40,540	3,300.0	24,184,365	75	75	22.20	16.65	13.24
Woonsocket, R. I.	40,342	5,632.0	25,631,100	100	100	15.55	15.55	9.88
Montgomery, Ala.	39,773	4,211.2	23,363,804	50	50	11.25	5.63	6.61
Chester, Pa.	39,553	3,000.0	18,526,284	70	70	16.00	11.20	7.49
Fitchburg, Mass.	39,233	18,163.0	33,150,934	100	100	17.15	17.15	14.51
Dubuque, Ia.	38,984	8,320.0	25,912,190	81	81	19.24	15.58	12.79
Galveston, Tex.	38,716	4,989.3	27,097,687	67	67	18.70	12.47	13.09
West Hoboken, N. J.	38,155	546.0	24,327,979	100	100	9.36	9.36	5.97
New Castle, Pa.	38,005	5,915.0	19,995,000	55	55	20.00	11.00	10.52
Roanoke, Va.	37,864	3,462.4	35,361,123	40	40	12.50	5.00	11.67
Elmira, N. Y.	37,512	4,747.0	24,718,743	78	60	22.56	17.60	13.66
Huntington, W. Va.	37,404	7,920.0	29,432,257	80	80	9.71	7.77	7.57
East Orange, N. J.	37,246	2,480.0	50,490,649	100	100	11.66	11.66	15.81
Knoxville, Tenn.	37,174	2,551.0	22,782,239	80	80	16.00	12.80	9.81
Hamilton, Ohio	37,138	3,460.0	46,251,980	100	100	7.48	7.48	9.37
Lexington, Ky.	37,051	3,200.0	23,901,824	80	50	16.20	12.96	10.45
Springfield, Mo.	37,030	5,039.1	16,178,302	50	50	17.50	8.75	7.95
Quincy, Ill.	36,662	5,224.6	10,537,403	33	33	39.40	13.13	11.32
Charlotte, N. C.	36,079	8,192.0	18,216,755	30	30	12.00	3.60	6.06
Joliet, Ill.	35,858	2,520.0	7,519,794	33	33	52.70	17.57	11.05
Pasadena, Cal.	35,848	7,170.8	47,138,470	60	60	14.82	8.89	19.49
Auburn, N. Y.	35,633	5,440.0	22,538,902	80	100	18.49	14.79	11.23
Everett, Mass.	35,529	2,176.0	29,742,700	100	100	17.39	17.39	14.56
Decatur, Ill.	35,526	3,186.5	7,234,964	33	33	45.50	15.17	9.27
Portsmouth, Va.	35,465	1,680.0	12,343,960	50	50	15.06	7.53	5.24
Perth Amboy, N. J.	35,345	3,804.0	19,166,188	100	100	12.35	12.35	6.70
Taunton, Mass.	34,979	31,264.0	24,023,517	100	100	16.50	16.50	11.41
Quincy, Mass.	34,596	17,186.0	35,375,898	100	100	19.97	19.97	20.43

City.	Population Estimated as of July 1, 1912.	Area in Acres, July 1, 1912.	Assessed Valuation of Property.	Reported Basis of Assessment.		Tax Rate for City Purposes.		Per Capita Levy of Property Taxes.
				Real Property. (Percent).	Personal Property (Percent).	Per $1,000 Assessed Valuation.	Per $1,000 Estimated Valuation.	
Lansing, Mich	34,526	4,800.0	$16,475,695	60	60	$24.12	$14.47	$11.50
Pittsfield, Mass	34,435	22,900.0	34,014,985	100	100	14.45	10.84	14.31
Cedar Rapids, Ia	34,410	8,397.0	28,310,167	80	80	18.88	15.10	15.53
Oshkosh, Wis	34,130	5,446.4	22,706,113	68	68	16.71	11.36	11.11
San Jose, Cal	33,457	3,965.0	23,465,310	60	60	15.48	9.29	10.89
Amsterdam, N. Y	33,343	3,732.0	15,859,948	100	100	21.57	21.57	9.08
Jamestown, N. Y	33,176	5,410.4	16,831,602	70	70	25.81	18.07	11.77
Mount Vernon, N. Y	33,085	2,694.4	38,751,167	80	80	20.45	16.36	22.29
Niagara Falls, N. Y	32,901	6,970.0	41,459,289	40	25	21.98	8.79	24.00
Jackson, Mich	32,831	5,760.0	20,046,001	60	60	18.64	11.18	11.38
Williamsport, Pa	32,553	4,544.0	15,154,520	70	70	20.00	14.00	9.31
Joplin, Mo	32,480	9,600.0	10,042,877	40	40	29.50	11.80	8.62
Lima, Ohio	32,425	3,770.0	31,054,190	100	100	9.05	9.05	8.67
Muskogee, Okla	32,183	5,358.7	36,513,813	85	85	10.86	9.23	12.59
Chelsea, Mass	32,092	1,440.0	28,147,960	100	100	19.93	19.93	17.48
New Rochelle, N. Y	32,029	6,345.0	38,932,268	78	70	25.86	20.17	24.30
Aurora, Ill	31,840	4,420.0	9,003,711	33	33	36.62	12.21	10.36
Lorain, Ohio	31,756	6,235.0	45,319,875	100	100	6.53	6.53	9.32
Austin, Tex	31,622	10,561.0	22,299,123	75	75	16.63	12.47	11.72
Newport, Ky	31,057	843.0	15,921,886	65	50	15.83	10.29	8.11
Orange, N. J	30,857	1,400.0	21,451,421	100	100	15.56	15.56	10.82
La Crosse, Wis	30,757	5,866.5	20,475,907	80	75	15.01	12.01	9.99
Lynchburg, Va	30,720	3,000.0	34,530,899	72	75	15.00	10.80	16.86
Shreveport, La	30,582	6,380.0	16,542,208	40	40	15.45	6.18	8.36
Colorado Springs, Col	30,463	5,241.3	12,460,040	33	33	35.00	11.67	15.01
Council Bluffs, Ia	30,072	12,627.2	4,583,758	25	25	78.50	19.62	12.03

Census Estimates for July 1, 1914

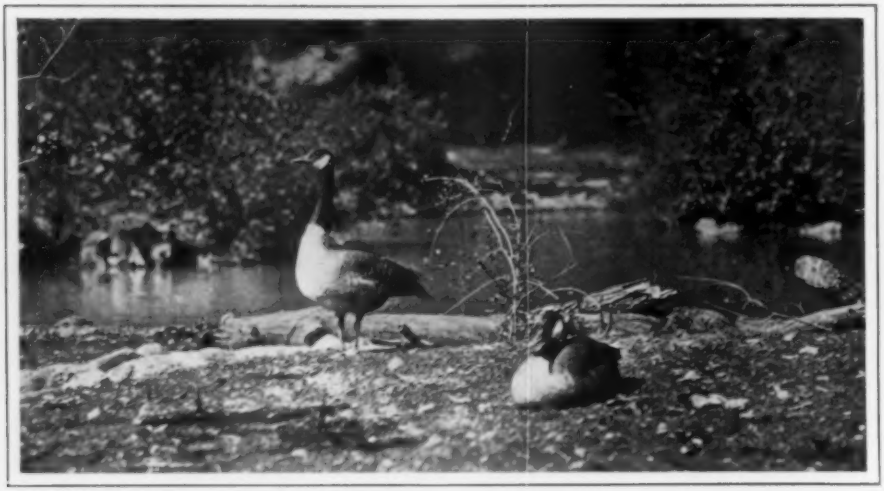
IN a forthcoming report of the Bureau of the Census, estimates are given of the population of the principal cities of the United States for July 1 of this year. The following are the figures for the cities of 100,000 or more:

Birmingham	166,154	Trenton	106,831
Los Angeles	438,914	Albany	102,961
Oakland	183,002	Buffalo	454,112
San Francisco	448,502	New York	5,333,537
Denver	245,523	Boroughs:	
Bridgeport	115,289	Bronx	529,198
Hartford	107,038	Brooklyn	1,833,696
New Haven	144,505	Manhattan	2,536,716
Washington	353,378	Queens	339,886
Atlanta	179,292	Richmond	94,043
Chicago	2,393,325	Rochester	241,518
Indianapolis	259,413	Syracuse	149,353
Louisville	235,114	Cincinnati	402,175
New Orleans	361,221	Cleveland	639,431
Baltimore	579,590	Columbus	204,567
Boston,	733,802	Dayton	123,794
Cambridge	110,357	Toledo	184,126
Fall River	125,443	Portland, Ore	260,601
Lowell	111,004	Philadelphia	1,657,810
New Bedford	111,230	Pittsburgh	564,878
Spr'field, Mass.	100,375	Reading	103,361
Worcester	157,732	Scranton	141,351
Detroit	537,650	Providence	245,090
Grand Rapids	123,227	Memphis	143,231
Minneapolis	343,466	Nashville	114,899
St. Paul	236,766	Dallas	111,986
Kansas City	281,911	San Antonio	115,063
St. Louis	734,667	Salt Lake City.	109,530
Omaha	133,274	Richmond	134,917
Camden, N. J	102,465	Seattle	313,029
Jersey City	293,921	Spokane	135,657
Newark	389,106	Tacoma	103,418
Paterson	134,305	Milwaukee	417,054

In commenting on these estimates the New York *Evening Post* says:

"These intermediate estimates, issued by the Census Bureau between its regular decennial enumerations, are a mere matter of the simplest arithmetic, and the only thing accomplished by their publication—except where changes of boundary have occurred—is the saving of that numerical labor to those who may wish to use present-day figures, on the basis adopted by the Bureau, instead of the figures of the Census of 1910. The assumption on which the Bureau proceeds is that the growth of the whole population, and of that part of it in any city or state, since the last census, is that fraction of its growth in the previous ten-year period which the time elapsed since the census is of ten years. It is to be noted that this does not mean the same *percentage rate* of increase as obtained in the preceding decade, but a less percentage rate. Presumably, this policy is based on the consideration that it is out of the question for a high geometric or percentage rate to be maintained for a great many decades. Be that as it may, anybody who feels either disappointed or aggrieved at the Census estimate should hasten to discard those emotions. The Census Bureau expresses no more of an opinion on the actual facts of New York's or Chicago's rate of increase since April 15, 1910, than would a cash register or an adding machine. It is of no use to pick a quarrel with the rule of three."

In the Zoölogical Gardens, Toronto, Ontario



AT HOME ON LAND OR WATER

BRUIN'S LOFTY GREETING TO VISITORS

ROADS & PAVEMENTS

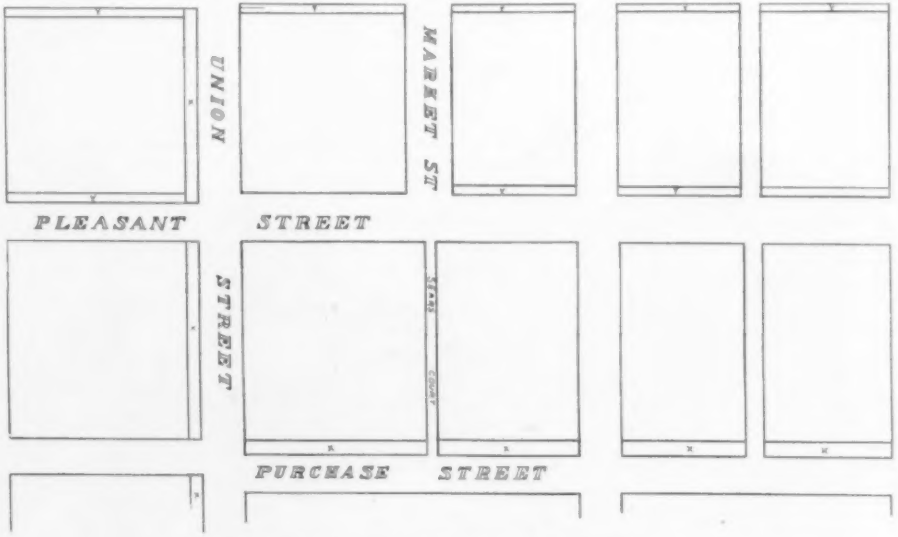
Photographs and data are requested for possible use in this department, from municipal officials, city or county engineers, road superintendents, manufacturers or others having interesting information on subjects relating to roads and pavements.

Street Widening in New Bedford, Mass.

By Watson Randolph

LIKE many old New England towns which, with the advance of manufacturing, grew into good-sized cities, New Bedford found herself confronted with a serious problem of how to remedy the traffic conditions in streets so narrow as to be entirely inadequate for the business carried on in them, but upon which stood the largest business buildings of the city. For several years the city government had realized that sections of the two chief business streets of the center of the city, Union and Purchase streets, were so narrow that traffic was congested to an extent that often caused danger to life. Both these streets had been limited to traffic in one direction, but conditions were so little improved that on June 26, 1913, both the aldermanic and common council chambers voted that Purchase street should be widened 16½ feet on the west side between Elm and Union streets, to conform to the width north of Elm street, and to widen Union street similarly between Purchase and Sixth streets.

A petition, signed by 6,000 citizens, indicating their desire for the widening, had previously been presented to the city gov-



STREET WIDENING IN NEW BEDFORD

X = widenings described in article as at present being made
Y = other widenings in business center made in recent years

PURCHASE STREET, LOOKING NORTH FROM UNION STREET
The line of buildings on the left is the original street line, to be widened 16 feet

ernment, with the result that the matter was referred to the people in a referendum at a city election and approved by a majority vote. The sections to be widened thus form a right angle with each leg two blocks in length. The width of the streets after the widening now in progress will be 60 feet. The most strenuous objection to the proposal was from some of the abutters. The widening is being done under the Massachusetts betterment law, by which the abutters pay a betterment tax after the completion of the widening. The argument of the abutters on the west side of the street was that they would not only have to pay betterment taxes to the city, but that they would also have to pay their part of the city's share of the taxation, thus paying for the widening twice; and that, although they would receive damages from the city, they would have left reduced room space and smaller rents. Another plea of those opposed to the plan was that the benefit derived would not justify the cost.

A WIDENED SECTION OF PURCHASE STREET

The following is the estimated initial cost of the widenings:

Purchase street:	
Damages	$373,885.72
Street work	22,114.28
Union street:	
Damages	119,092.35
Street work	8,907.65
Total	$524,000.00

The damages were figured by experts who were, according to the statement of Mayor Charles S. Ashley to the city council, prepared to back their estimates in court if it became necessary, and to carry out any of the alterations that were necessary to be made for the amounts which they had calculated as necessary to make buildings conform to the widened streets.

Since the start of the work of widening the streets, several plans for new buildings on the streets to be widened have been announced, and it is expected by the city officials that New Bedford will see an era of building in the business section after the completion of the work of widening such as has never before been known. Some of the large buildings which will be cut will merely be given new fronts, while others are to be entirely remodeled.

The new 60-foot streets would not be considered wide, as streets run. The new width will greatly improve conditions in New Bedford, however, for the increase of 16½ feet will enable the street car company to lay double tracks through the main business street, and will permit of traffic being thrown open to both directions. It is estimated that the work now in progress will be completed in a little over two years.

VERTICAL LINE SHOWS WHERE THIS BANK BUILDING WILL BE CUT

Street Opening and Widening in Dallas

By J. R. Babcock

Secretary, The Chamber of Commerce, Dallas, Texas

THAT problem which is so serious to many cities which "just grew" in the great Southwest—the problem of the widening of streets—is being met in Dallas with a determination that is bringing results.

This city had a population of 10,358 in 1880, 42,638 in 1900, 92,104 in 1910, and an estimated population of 120,594 on January 1, 1914. As a result of this rapid growth, some of the business streets, which were of sufficient width a few years ago, began to be congested with traffic to the point where relief was imperative. It required much education and time to convince the people that real money should be spent by the city in widening its cross streets. But they have learned their lesson. The *Dallas News* hammered on the problem day in and day out, and finally results were obtained.

During the year 1913 the following streets were opened or widened:

Wellborn Street, from Fairmount to Maple. Opened.
Noah Street, from Anthony to Miller. Opened.
Griffin Street, from Elm to Pacific. Widened 14 feet.
East Main Street, from Exposition to Pacific Avenue. Widened 19 feet.

GRIFFIN STREET, DALLAS, TEXAS
Widened from 38½ to 53 feet

North Pearl Street, from Trinidad to Cedar Springs. Widened.

Pearl Street, from McKinney Avenue to Cedar Springs. Widened.

Cadiz Street, at Gulf Colorado and Santa Fe Railway. Widened.

Suits were filed during 1913, and litigation is now pending for the widening and opening of the following streets:

Corsicana Street, extension from Park Avenue to Harwood Street.

Broom Street, extension from Carter to Lamar.

Lamar Street, from McKinney Avenue to M. K. & T. Railway. To widen 10 feet.

Laws Street, from McKinney Avenue to M. K. T. Railway. To widen 10 feet.

Masten Street, from McKinney Avenue to Pacific Avenue. To straighten and widen to a uniform width of 60 feet. This project required the filing of 85 separate law suits.

Pennsylvania Avenue, at Houston and Texas Central Railway. To widen and round off corner.

St. Paul Street, from Elm to Pacific Avenue. To widen 30 feet. This street is in the heart of the retail district.

Wood Street, at Ervay Street. To widen 30 feet for a distance of 100 feet to conform with width of west end of Wood Street.

Alley between Commerce and Jackson from Pearl to Harwood Streets.

Elm Street, from Ervay to Harwood. To widen 30 feet. This street is in the retail district and is the most ambitious project yet undertaken by Dallas. It will necessitate the tearing down of the Flatiron building, a three-story and basement structure at the corner of Elm and Ervay Streets, also the slicing off of 20 feet of the fronts of many two- and three-story store buildings. The report of the appraisers appointed by the court has not yet been filed, but their estimate of the damages to be awarded the affected property will doubtless exceed $200,000.

The plan used by Dallas to secure funds with which to widen its streets is to assess the cost of the improvements against the property in the neighborhood in proportion to the amount of benefit such property will derive. This method has been found to work satisfactorily.

A notable instance of street widening is shown in the accompanying photograph. Griffin Street extends from Elm to Pacific Avenue, and is in the very heart of the retail district. Advantage was taken of a fire which destroyed the large house of Huey & Philp to widen this busy artery of traffic from 38½ feet to 53 feet, the cost being $36,250.

This problem, with which Dallas is struggling so successfully, is confronting every city of this class in this section. Most of them grew without any real planning, and the people are now paying the penalty of the mistakes of their forerunners. But Dallas recognizes what is necessary, and, when the plans under way are completed, the kinks in her arteries of commerce will have been straightened out and many of the original errors will have been remedied.

Street Lighting

Lighting the Board Walk at Asbury Park

THE adequate and beautiful illumination of our great seaside resorts is a subject of much interest to municipal authorities and hotel keepers, as well as to the pleasure seekers themselves. In order to withstand the severe weather conditions to which the poles are openly exposed, they should be made of the best possible material with plenty of support at the points of greatest strain.

The Beach Commission of Asbury Park, N. J., which is in control of the beach front, the board walk and city property, has had some varied experience in the lighting of the board walk. Some years ago the city installed a series of ornamental arc lamp posts of the crook type, from each of which was suspended a single arc lamp. Asbury Park being, however, desirous of obtaining something more ornamental and in keeping with modern progress along thoroughfare lighting lines, has recently installed an equipment of cast iron ornamental poles, designed to carry five tungsten units.

Eighty-nine of the lamp posts have been placed on the board walk, the city paying for the poles. The Beach Commission operates its own electric light plant for the bath houses, pavilion and beach concessions. During the winter months the five lamps on each post are operated, weather conditions taken into consideration, from dusk to eleven o'clock. In the summer months they are operated till midnight, after which time the four suspended lamps are cut off. The top lamp burns all night, winter and summer. The suspended lamps are 60-watt, the top lamp 100-watt.

The accompanying photograph shows a section of the board walk where these poles are installed. They are handsomer in appearance than the old arc lamp poles, and will be much appreciated during the summer months by the crowds of visitors who throng this resort.

Courtesy of Elmer P. Morris Iron Works

ORNAMENTAL LIGHTING ON THE BOARD WALK, ASBURY PARK

NIGHT SCENE IN MICHIGAN CITY, INDIANA

Installing Ornamental Lighting in Michigan City, Indiana

By Harry M. Miles

A CITY of from 25,000 to 100,000 population can well afford a "White Way" in the mercantile district. The merchants and property owners in cities of this size are surely wide awake and progressive. The installation of the "White Way" always arouses civic pride and stimulates reports that the city is a desirable place to live in. The decorative lighting attracts crowds to the retail district not only from the resident portions within the city but from the neighboring towns and cities. Trade follows the light, and the merchants are repaid many times over for the expense incurred in the installation of the "White Way."

Property owners and commercial clubs are sometimes surprised to find that an ornamental lighting installation may be had at a moderate cost. In Michigan City, Ind., 117 five-light posts were installed, and all unsightly wooden and iron trolley poles were removed. The posts cost about $35 each, equipped with glassware and lamps. The entire installation, including all material and labor necessary to make the lights ready to be turned on, cost about $10,500. This was met without objection by the owners of abutting property on the line of the improvement. The rate of assessment was $1.60 per front foot.

One of the accompanying illustrations shows the type of post which was installed in Michigan City. The base is 18 inches square and 2 feet high. The column is an 8-inch octagon at the bottom and tapers gracefully to a 4-inch octagon at the top. The distance from center to center of opposite globes is 36 inches; the height from the ground to the bottom of the pendant globes is 11 feet, to the top of the top globe 14 feet 3 inches. The pendant globes used are 12 inches in diameter with a 6-inch fitter, and the top globe is 14 inches in diameter with an 8-inch fitter. The globes are of Alba glass. The posts are opposite each other, six to a block on each side of the street.

BEFORE THE ORNAMENTAL LIGHTING SYSTEM WAS INSTALLED IN MICHIGAN CITY

Span wires attached to ugly wooden poles

The other views given herewith show the main business street in Michigan City before and after the posts were installed and the trolley poles removed. It will be noted that the span wires are attached to the building fronts.

Illustrations in this article by courtesy of George Cutter Company

AFTER REMOVING THE TROLLEY POLES AND PLACING THE LIGHTING STANDARDS

Electric light wires underground; span wires attached to building fronts

The editors are glad to receive photographs and data for possible use in this department from municipal officials, water works superintendents, consulting engineers, manufacturers or others having interesting information on water supply subjects.

RAPID SAND FILTRATION PLANT, MONTREAL, QUEBEC

The Filtration of Public Water Supplies

By George A. Johnson
Consulting Engineer, New York City

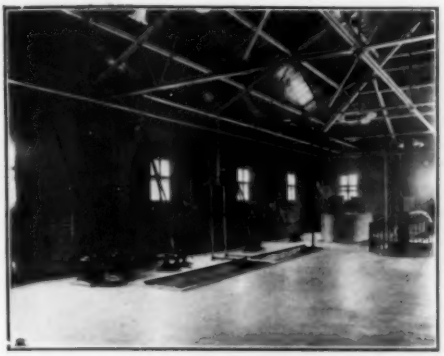
THE water supplies of over 17,000,000 people are to-day filtered through artificial filters. This fact may come as a distinct surprise to many who will realize that this number of people represents over 40 per cent of the population of the United States resident in communities of 2,500 or more. This is all the more remarkable by reason of the fact that fourteen years ago less than 2,000,000 people in this country were furnished with filtered water supplies.

Filtration of public water supplies is becoming more imperative each year, due to the increasing amount of polluting matter which is discharged into the rivers, lakes and other surface waters from which the great majority of the cities of this country are forced to take their water supply. And such filtration has had a most salutary effect on the public health, particularly as regards typhoid fever and other intestinal disorders that are water-borne. Substantial proof of this point is contained in the following table:

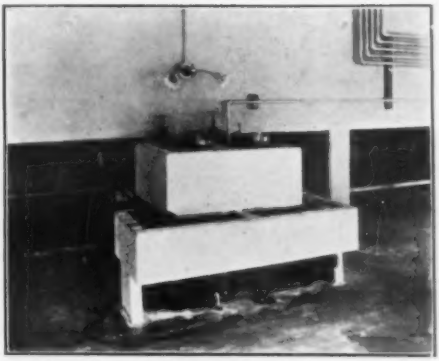
TYPHOID FEVER DEATH RATES IN CERTAIN AMERICAN CITIES BEFORE AND AFTER FILTRATION OF THE WATER SUPPLY

City.	Kind of Filtration.	Number of Years Averaged.		Typhoid Fever Death Rate per 100,000 Population.	
		Before Filtration.	After Filtration.	Before Filtration.	After Filtration.
Albany, N. Y.	Slow sand	10	13	90	21
Cincinnati, O.	Rapid sand	8	5	55	11
Columbus, O.	Rapid sand	9	4	62	17
Indianapolis, Ind.	Slow sand	7	6	85	25
Lawrence, Mass.	Slow sand	20	20	102	23
Louisville, Ky.	Rapid sand	10	3	56	25
New Haven, Conn.	Slow sand	7	6	46	25
Paterson, N. J.	Rapid sand	5	10	32	9
Philadelphia, Pa.	Slow sand	8	5	54	22
Pittsburgh, Pa.	Slow sand	9	4	125	10
Scranton, Pa.	Rapid sand	12	2	20	9
Washington, D. C.	Slow sand	6	6	57	31
Weighted averages	.....	..	..	78	20

From the above figures it is seen that filtration of the water supplies of these twelve representative cities, having in 1910 a total population of about 4,000,000, unquestionably in a very large measure was respon-



CHEMICAL MIXING ROOM, MONTREAL FILTRATION PLANT

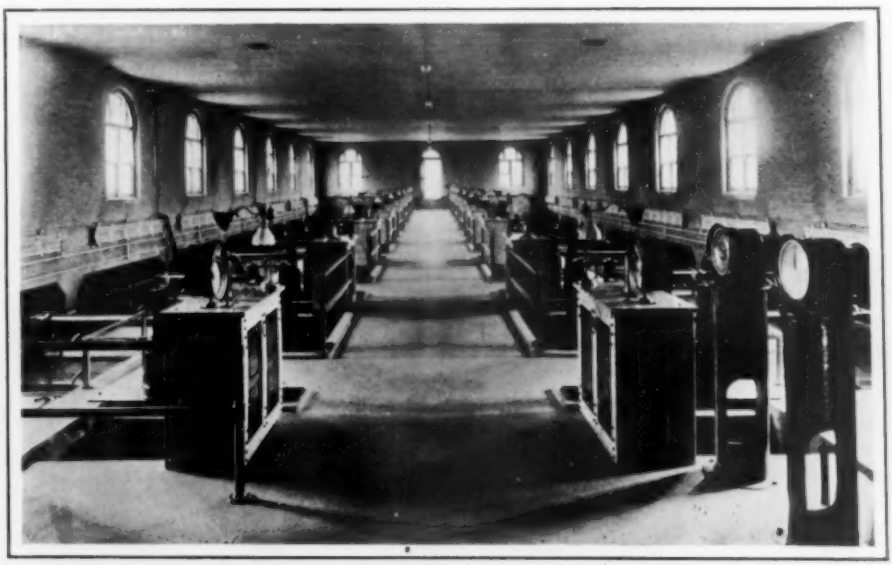


SULPHATE OF ALUMINA ORIFICE TANKS, MONTREAL FILTRATION PLANT

sible for a reduction of 74 per cent in the typhoid fever death rate. Before filtration the rate was 78 per 100,000, and after filtration 20. On this basis, among a total population of 4,000,000, the lives of 2,320 people were saved each year. Taking the value of a human life at as low a figure as $5,000, this represents a saving in vital capital of $11,600,000 per annum. In round numbers the total cost of the filtration plants in these twelve cities was $24,000,000. Thus it is seen that the vital capital saved in two years' time is about equal to the cost of building water filtration works for these twelve cities.

It may interest some readers to learn that in 1905, only nine years ago, more people were being furnished with filtered water from municipal water works in Japan than in this country. The advances made in America during the past decade, however, have placed this country far in the lead.

There are only two recognized types of filtration processes which have stood the test of time. These are the slow sand filtration and rapid sand filtration processes.



OPERATING FLOOR, RAPID SAND FILTRATION PLANT, NIAGARA FALLS

FARGO, N. D., FILTRATION PLANT

The slow sand filter has been variously styled the "English," the "sand," or the "slow sand" filter; while the rapid sand filter has been called the "American," the "mechanical," the "rapid," or "rapid sand" filter.

The essential differences in the two types of filters are as follows: In the slow sand filter the rate, or velocity of flow, of water through the bed of sand is much lower than in the rapid sand filter, and when the surface of the bed becomes clogged the filter is cleaned by scraping off the top inch or so of the clogged material. In the rapid sand filter the grains of sand comprising the filter proper are much coarser than those in the slow sand filter, and when the bed becomes clogged the whole filter is washed in place by forcing filtered water up through it in a reverse direction, the mud and other foreign matters becoming separated from the grains of filtering material and passing away through a drain. While it takes but a few minutes to clean a rapid sand filter, it takes several days to clean a slow sand filter of equal daily filtering capacity. In the regulation slow sand filter no coagulating chemicals are used to prepare the water for final filtration, but in rapid sand filters such coagulants are always used. Some of the best known plants of the slow sand and rapid sand types are found in the following table:

REPRESENTATIVE WATER FILTRATION PLANTS OF THE RAPID SAND AND SLOW SAND TYPES

City.	Plant Built.	Daily Filtering Capacity. (Gallons.)
SLOW SAND FILTERS:		
Albany, N. Y.	1899	20,000,000
Denver, Colo.	1902	30,000,000
Indianapolis, Ind.	1905	24,000,000
Lawrence, Mass.	1893	6,000,000
New Haven, Conn.	1904	15,000,000
Philadelphia, Pa.	1900–1911	420,000,000
Pittsburgh, Pa.	1908	200,000,000
Providence, R. I.	1909	24,000,000
Reading, Pa.	1903–1913	22,000,000
Springfield, Mass.	1906	15,000,000
Washington, D. C.	1904	100,000,000
Wilmington, Del.	1909	15,000,000
Yonkers, N. Y.	1903–1909	10,000,000
RAPID SAND FILTERS:		
Atlanta, Ga.	1887–1910	21,000,000
Cincinnati, O.	1907	112,000,000
Columbus, O.	1908	30,000,000
Evansville, Ind.	1909	12,000,000
Grand Rapids, Mich.	1913	16,000,000
Hackensack, N. J.	1905	24,000,000
Harrisburg, Pa.	1905	12,000,000
Little Falls, N. J.	1902	32,000,000
Louisville, Ky.	1909	36,000,000
Minneapolis, Minn.	1913	39,000,000
New Orleans, La.	1910	40,000,000
Niagara Falls, N. Y.	1911	16,000,000
Scranton, Pa.	1911	6,000,000
Toledo, O.	1909	20,000,000

The first municipal slow sand filter built in this country was placed in operation at

Poughkeepsie, N. Y., in 1875, and the construction of a few other small plants of the same type followed shortly afterwards, but fifteen years later, in 1890, only 35,000 people were being served with water purified by this method. In 1900 this number had increased to 360,000; in 1910 to 3,883,000; and at this date, 1914, a total of 5,398,000 people are being supplied with slow sand filtered water. Three-quarters of this population are located in the thirteen cities listed in the foregoing table, and the remainder are widely scattered throughout the country in some thirty smaller cities. The total daily filtering capacity of all existing slow sand filter plants is about 840,000,000 gallons daily.

The first municipal rapid sand filter plant built in this country was placed in operation in 1885 at Somerville, N. J., and five years later, in 1890, the number of people served by rapid sand filters was 275,000. In the next decade this number increased to 1,500,000, and in 1910 to 6,922,000. In 1914 the total number of people supplied with filtered water from rapid sand filters was 11,893,000.

The above data furnish food for serious reflection, showing as they do the relative advance in actual application of water filtration by the two processes. Reduced to concise form the relative growth of slow sand filtration may be presented as follows:

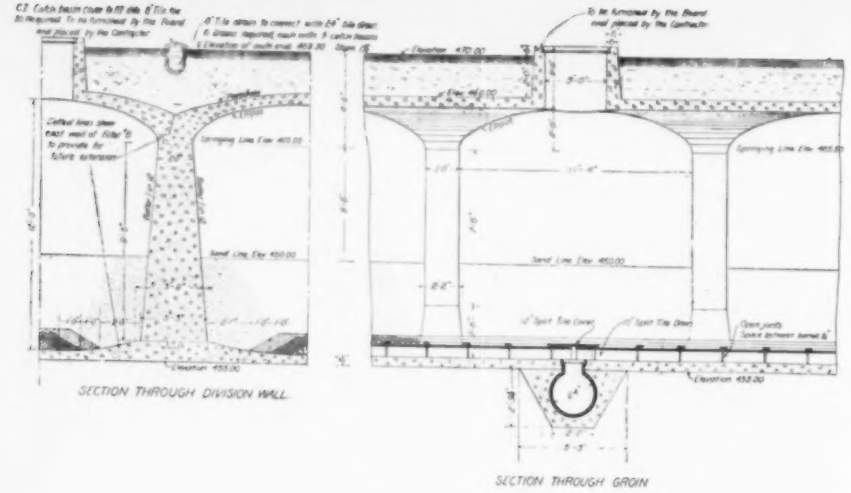
RELATIVE GROWTH OF SLOW SAND AND RAPID SAND FILTRATION IN THE UNITED STATES

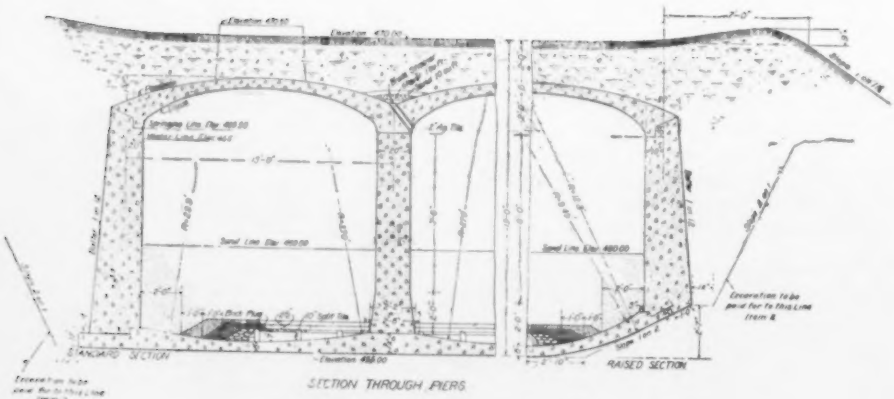
Year.	Per Cent of Population of the United States in Communities of 2,500 or more Supplied from		
	Slow Sand Filters.	Rapid Sand Filters.	Both Types.
1880.....	0.23	0.00	0.23
1890.....	0.16	1.28	1.44
1900.....	1.22	5.03	6.31
1910.....	10.13	18.05	28.18
1914.....	12.70	27.98	40.68

From the foregoing figures it is perfectly obvious that the advance of rapid sand filtration has been far more pronounced than is the case with the slow sand process. In the decade 1900-1910, slow sand plants were built to serve a total of 3,523,000 people, and this was the period during which this process forged ahead more rapidly than at any other time in its American history. During the past four years the additional population served by slow sand filters amounted to 1,515,000.

On the other hand, in the decade 1900-1910, rapid sand filter plants were built to serve a total population of 5,422,000, or 54 per cent in excess of the slow sand filter record during the same period. Similarly, during the past four years the additional

SAND WASHER AND SAND BINS, SLOW SAND FILTERS, WASHINGTON, D. C.





SECTIONS THROUGH COVERED MASONRY SAND FILTER

DIAGRAM SHOWING CONSTRUCTION OF SLOW SAND FILTER

population served by rapid sand filter plants was 4,971,000, or 228 per cent in excess of the slow sand filter record in the same period. Such data show clearly supremacy of the rapid sand filtration idea.

Now there must be a reason for this, and among other causes the following throw considerable light on the matter:

Out of a total of 5,398,000 people at the present time served by slow sand filters, over 3,000,000 are located in the cities of Albany, Indianapolis, Philadelphia, Pittsburgh, Springfield, Washington and Wilmington. At Albany and Pittsburgh it has been necessary to add rapid filtering preliminary roughing filters to the original slow sand filter system. Similar roughing filters form an integral part of the slow sand filtration systems at Philadelphia and Wilmington. At Indianapolis, Springfield and Washington coagulants are used in order better to prepare the raw waters for final filtration, and provision is being made for similar coagulating pretreatment at the Philadelphia (Torresdale) and Pittsburgh plants.

In other words, the regulation slow sand filtration process could not be successfully used in the above cities, and it has been found necessary to make use of certain in-

herent ideas upon which the rapid sand process is based. Generally speaking, this whole matter is correctly summed up by Mr. Allen Hazen in his book on "Clean Water and How to Get It" (Second Edition, 1914, pp. 95-96), as follows:

"Sand filters are used in connection with various preliminary treatments, but, generally speaking, they are adapted to treating only such waters as are capable of being purified in that way *without any preliminary treatments*,* or with only rough and inexpensive treatments. If the water ordinarily requires coagulation, then, as a rule, it will be better to make the coagulation thorough and use mechanical [rapid sand] filters for the final treatment."

As to the relative hygienic efficiency of the two processes, the data contained in the first table in this article show that in six representative plants of each type there is little to choose, but that the average result is measurably better in the case of the rapid sand filter plants.

As to the relative cost of construction and operation of slow sand and rapid sand filter plants, it may be stated that the average cost of building the slow sand filter plants at Albany, Pittsburgh, Philadelphia (four plants) and Washington was $32,600 per million gallons daily capacity; and the average cost of building the rapid sand filter plants at Cincinnati, Columbus, Dallas, Harrisburg, Little Falls, Lorain, Hackensack and New Orleans was $12,100 per million gallons daily capacity. At 5 per cent these costs represent annual fixed charges of $4.47 and $1.66, respectively, per million gallons of water filtered. Similarly, the average cost of operation and maintenance of the slow sand filter plants at Albany, Pittsburgh, Philadelphia and Washington was $2.86 per million gallons of water filtered, and that of the rapid sand filter plants at Cincinnati, Harrisburg, Little Falls, Louisville and New Orleans was $4.04 per million gallons of water filtered. Adding the average fixed charge to the average operation and maintenance charges makes the total cost per million gallons of filtered water in the above cities $7.33 for slow sand filters and $5.70 for rapid sand filters. The difference, capitalized at 5 per cent, represents the sum of $11,900 per million gallons of filtering capacity in favor of the rapid sand process.

*Italics are G. A. J's.

INTERIOR OF SLOW SAND FILTER AT TORONTO, SHOWING LAYER OF DIRTY SAND REMOVED BY SCRAPING

ONE PIECE CASTING

Where Quality *and* Detail Count

This attractive Lamp Standard was designed by Chester B. Price, architect, of New York City, and adopted by the City of Hartford, Conn.

Being very elaborate in detail, there were many difficult features to be solved by the moulder to permit of perfect castings.

We executed this design to the entire satisfaction of the architect and have just completed contract for 280 posts—single and double light—for Hartford.

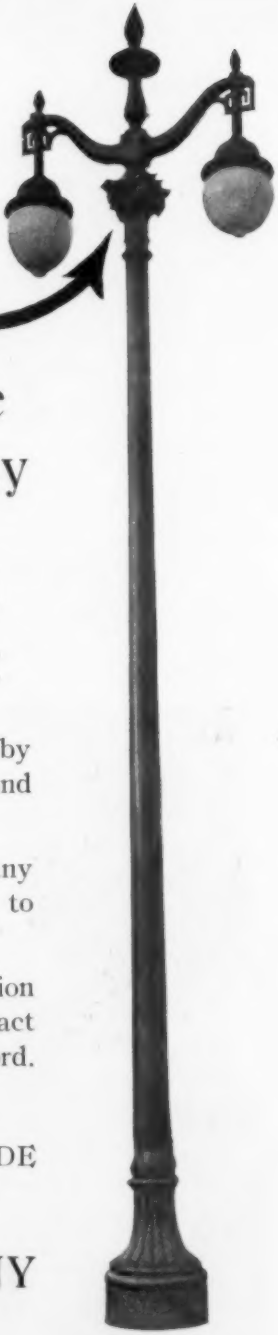
We make individual designs a SPECIALTY.

Let us embody your ideas in our HIGH GRADE CASTINGS.

UNION FOUNDRY COMPANY

Manufacturers of Highest Grade Cast Iron
ORNAMENTAL Standards and Brackets.

ANNISTON ALABAMA



Special Design
Adopted by
Hartford, Conn

When writing to Advertisers please mention THE AMERICAN CITY.

The Ottawa, Ont., Water Works Case

The legislature of Ontario may empower the Provincial Board of Health to order a municipality to establish water works, when the municipal authorities fail to take that action voluntarily, according to the decision of the Ontario Supreme Court, in the recent case of Clarey vs. City of Ottawa, 25 Ontario Weekly Reporter 615. Mr. Justice Lennox said:

"It is a startling proposition then that although the administration of the Dominion is controlled in the expenditure of money, * * * yet one man, the chief officer of health for Ontario, despite the protest, it may be, of any majority of her citizens, has the power to compel a small community like Ottawa to assume a burden of $8,000,000, or for that matter, of $13,000,000 or more, and yet I have no doubt at all that if the proper steps and proceedings are taken to this end, this officer has this power; and, further, although it may be said that this is a long step from government of the people by the people, yet, in view of the criminal negligence of some municipalities, it cannot be said that the provisions of the Public Health Act are too arbitary or drastic in this regard. But being an exceptional and drastic power, it is obviously imperative that the conditions of its exercise must unquestionably exist and be scrupulously observed."

Proceedings taken to compel the establishment of a water works system for Ottawa were accordingly quashed because no definite plans and specifications had been submitted to the Board of Health before the order was given, as required by the act authorizing the improvement. As an additional ground for quashing the proceedings, the court finds that the proposed improvement contemplates the construction of extensive works across the line in Quebec, without first obtaining the consent of the Quebec legislature. It is held that the Ontario legislature is without power to authorize works in an adjoining province until the authorities of the latter province assent.

At an earlier hearing in the same suit, the Supreme Court declared that the act of 1913, which authorizes the city to construct a water works system, and, for that purpose, to borrow not more than $5,000,000, does not empower the municipality to issue debentures for that amount to be applied toward the construction of a system costing $8,000,000. (25 Ontario Weekly Reporter 340.)

+ +

Complete Metering Recommended

A "Report on a Survey of the Department of Water," prepared for the Chamber of Commerce of Reading, Pa., by the New York Bureau of Municipal Research, has been published in pamphlet form. Many interesting criticisms and constructive suggestions are embodied in the report. The following are extracts from the Bureau's recommendations on the use and safeguarding of water meters:

In a city partially metered, as Reading is, the daily consumption per capita should not exceed 100 gallons a day. In Reading it is 141 gallons, and is steadily increasing. During the last year it increased 6 gallons per capita per day. Such conditions can be and must be changed.

In a city where all supplies are metered, and where pitometer tests are made to locate leaks in the mains, the daily consumption per capita seldom exceeds 70 gallons per day.

Competent authorities estimate that from 25 per cent to 60 per cent of all water supplied on an unmetered basis is wasted.

Only ignorance of the benefits resulting from complete metering keeps Reading from taking this necessary step. At present practically nothing is being done to extend the installation and use of meters throughout the city. Efforts should be made to make the installation of meters more popular. The reduction of charges for water supplied by meter would undoubtedly be a move in this direction.

Experience has shown that the installation of meters saves money not only to the consumer but also to the city. Measurement by meter is the only equitable basis on which to supply water. The use of meters saves the supply by preventing waste, which not only reduces the cost of distribution, but also postpones the necessity for costly extensions and additions to the distributing system and pumping plants. If the operating expenses were reduced the department could afford to reduce rates still further.

The sealing of meters, which effectively safeguards the revenue, has been entirely neglected. Anyone can now take out a meter and replace it in service at any time without the knowledge of the department. Such conditions do not give proper control over revenues. Cases have been noted in Reading where meters have been entirely disconnected, a small piece of pipe inserted in the place of the meter, and water used without the department being any the wiser.

Barrett's PAVING PITCH

Third Street, Wausau, Wis. Creosoted Wood Block Pavement, filled with Barrett's Paving Pitch.

For Use On Streets Carrying Railroad Tracks

FOUR materials are commonly used for filling the joints of brick pavements; namely, asphalt, cement, sand and pitch.

Asphalt is weak in adhesion and the vibration of the rails loosens it from the brick so that it can be picked out with the fingers. It is then of no value in preventing the intrusion of moisture.

Cement fails because it is too rigid. An elastic filler near street car rails is imperative. Cement will be pulverized by the constant hammering vibration of the rails due to the passage of heavy cars, and long ruts will appear alongside the tracks. A cement filler pavement cannot be removed for track repairs except by complete destruction of the pavement.

Sand is no filler at all, as it permits water to run through to the foundation and do damage in the form of ice and frost below the surface.

Barrett's Paving Pitch meets every requirement. It acts as a cushion between the bricks, and street car track vibration does no damage to the pavement. Barrett's Paving Pitch offers no obstacle to the removal of the brick for track repairs, and the pavement can be restored by any unskilled laborer, using the same bricks.

Paving Pitch booklet free on request.

BARRETT MANUFACTURING COMPANY

NEW YORK CHICAGO PHILADELPHIA BOSTON MINNEAPOLIS ST. LOUIS CLEVELAND
PITTSBURGH CINCINNATI KANSAS CITY SEATTLE BIRMINGHAM

Municipal and Civic Publications

Copies may be ordered of THE AMERICAN CITY, *with the exception of Government publications, which should be ordered direct*

WHITTEN, ROBERT H., Librarian-Statistician of the Public Service Commission for the First District, State of New York.

Regulation of Public Service Companies in Great Britain. With Supplemental Chapters on the Boston Sliding Scale and Toronto Auction Sale and Maximum Dividend Plans. (Reprint of Appendix G of the Annual Report of the Public Service Commission for the First District, State of New York, for the year ending December 31, 1913.) 1914. 231 pp. **Free**

This report is the result of some six months' special investigation and study undertaken by Dr. Whitten in behalf of the Department on Regulation of Municipal Utilities of the National Civic Federation. The phases of public service control in Great Britain have been selected which seem to offer most in the way of suggestion in the solution of American problems. Such important questions as the sliding scale of rates and dividends, the sale of premium shares at auction or by public tender and the audit of company accounts are discussed with discrimination, especial emphasis being laid upon the general principles underlying these methods of control and their applicability to American conditions. Dr. Whitten develops a new system of control which he calls "the merit rating method" and which he recommends as superior to both the sliding scale and the system of occasional rate regulation. Under this system the state commission "will periodically rate the companies on the basis of comparative efficiency in serving the public and allow them to earn dividends varying with such efficiency."

WENTWORTH, JEANIE WELLS.

A Report on Muncipal and Government Ice Plants in the United States and Other Countries. (Prepared for the President of the Borough of Manhattan, City of New York.) 1913. 78 pp. **Free**

Detailed information is given concerning the municipal ice plants at Weatherford, Okla., and New Britain, Conn. (the only municipal ice plants found in the United States conducted on a commercial basis); United States Government ice plants in Washington, D. C., the Philippine Islands, Panama, and Hawaii; municipal ice plants as operated in Europe; agitation for municipal plants in the United States; and, in a final chapter, the situation in New York State and City. The investigation goes to prove that the ice plants studied are a profitable venture, the immediate result being to show the benefit of establishing such a plant in Manhattan. Copies of the report may be obtained upon application to the office of the President of the Borough of Manhattan, New York City.

KALES, ALBERT M., Professor of Law in Northwestern University.

Unpopular Government in the United States. 270 pp. One map. **$1.62**

According to the author the multiple burdens laid upon the electorate by the long ballot system of voting make political ignorance inevitable. The result is that organized vote directors are able virtually to deprive the voter of his franchise and to run the government for selfish ends. These men the author terms "politocrats."

The first part of the volume treats of the rise of unpopular government under the politocrats, despite the precautions taken to prevent it and in the face of popular disapproval. Among the concrete subjects of great present interests which are discussed in this connection are the Australian ballot and civil service acts, the abolition of the party circle and party column, the primaries, the initiative, referendum, and recall.

The second part of the volume offers constructive suggestions for restoring a true democratic ideal. The commission form of government is discussed as a remedy for smaller cities, and the application of its principles recommended in larger cities and the state and in the selection of judges. Separate chapters deal with contemporary plans for a union of executive and legislative powers in the state governments; the second-chamber problem; methods of selecting and retiring judges; and proposed improvements in the plan of the federal government. For the complete emancipation of the voter the author looks to the short ballot.

THE MAYOR'S MARKET COMMISSION, NEW YORK CITY.

Report of the Mayor's Market Commission of New York City. (Hon. Cyrus C. Miller, Chairman; Hon. John Purroy Mitchell; Hon. George McAneny.) December, 1913. 311 pp. 8 drawings.

The result of an extended investigation into marketing conditions in the boroughs of Manhattan, Brooklyn, Greenpoint, The Bronx, and Richmond, conducted under the Market Commission appointed by Mayor Gaynor on May 14, 1912. Among the recommendations made the first is the establishment of a large, well-organized wholesale municipal market in each borough. A Department of Markets is also suggested, the executive functions of which would be vested in a Board of Market Commissioners, one from each borough. In addition to the information concerning present facilities for distribution, present public markets, etc., contained in the report proper, special articles are found in the appendix (which comprises the greater part of the volume), covering the following subjects: existing steamship and railroad terminals in New York City; financial statement of New York public markets; description and plans of proposed Bronx, New West Washington, and Gansevoort markets; studies of public markets in American and European cities; provisioning metropolitan populations with fresh foodstuffs, including a history of the market system of Berlin; transportation and its relation to retail prices; waterways and cost of living; trolley freight; refrigeration at the market center; grading, packing and marketing of farm produce; abstract of testimony taken by the commission; bibliography; text of proposed bill creating department of markets.

CURTIS, HENRY S., Ph. D., former Secretary and Vice-President of the Playground Association of America.

Play and Recreation for the Open Country. 265 pp. Illustrated. **$1.16**

The need of intelligent recreation for the farmer, the farmer's wife and children, and the farm hands, is discussed with relation to the home, school, church, and rural social center. From a human point of view, and as a means of checking the exodus from country to city, the author regards better organized and more extensive recreational facilities as a crying necessity. Practical suggestions are offered for restoring to American country life the elements of romance, adventure, and social coöperation lost with the passing of old pioneer conditions. There is a valuable chapter on educational extension work through the rural social center with the aid of moving picture films. The author, himself reared on a farm, shows a keen insight into conditions affecting all ages of farm dwellers, and his suggested remedies, emanating from a pioneer of the recreational movement in America, carry with them the weight of practical authority.

Alba Installation, Seventeenth St., Washington, D. C.

Get the best results in street lighting

Instead of dazzling bare lamps with patches of light underneath and gloom beyond, why not have ample, even, soft light? Spread it across the pavement, along sidewalks and over store fronts, etc.,—that's money well used.

Alba Street Globes

Ornamental street lighting with Alba Globes is by far the best street lighting. Alba effects a more even distribution and delivers a greater amount of light from the same lamps than any other glass. Alba does not harbor dirt, is cleaned with a quick dry-rag rub and resists breakage.

Expert Advice and Planning Free

Send us street plans, width of pavement, sidewalks, parking, location and size of trees, also locations and heights of buildings—we will tell you how to save money and get better results.

Write for free booklet on Ornamental Street Lighting No. 43-R.

Macbeth-Evans Glass Company
PITTSBURGH

Sales and Showrooms also in New York, Chicago, Philadelphia, St. Louis, Boston, Cincinnati, Cleveland, Dallas, San Francisco

Macbeth-Evans Glass Co., Ltd., Toronto

Registered U. S. Pat. Off.

NOLEN, JOHN,
GOODRICH, E. P.,
LONG, HENRY C., and
LANE, F. VAN Z.

Greater Erie. Plans and Reports for the Extension and Improvement of the City. (Prepared for the City Planning Committee of the Chamber of Commerce and the Board of Trade of Erie, Pa.) 1913. 255 pp. Photographs, plans, and one large map. **$1.25**

Mr. Nolen's part of the report covers streets, railroads, water front, buildings and open spaces in Erie, Pa., also a chapter on "The Indispensableness of City Planning." "Report on Street Urban Transportation Facilities" is the work of Mr. Goodrich assisted by Mr. Lane, and "Report on the Development of Commerce in Erie" is by Henry C. Long. There is also a chapter entitled "Legal Aspects," by a legal subcommittee. Appendices are included giving articles by properly qualified local authorities on the history of Erie, the city government, the school district, playgrounds and buildings, organizations, real estate conditions, etc. 132 photographs, illustrating a great variety of scenes in all parts of the world as well as in Erie—civic centers, boulevards, railroad stations, water fronts, garden villages, public and private buildings, municipal bath houses, etc.,—form a unique feature of this unusually comprehensive and well executed report.

OGDEN, H. N., C. E., Professor of Sanitary Engineering, Cornell University.

Sewer Design. (Second Edition.) 1913. 248 pp. **$2.00**

Contains the essentials of sewer design arranged in form readily intelligible to the general-course student in Civil Engineering. This edition does not differ materially from the original edition, but as the result of fifteen years of use in his classes the author has thought fit to prepare a second edition in order to correct some minor errors and insert additional material. Previous statements as to the necessary amount of leakage to be considered have, in particular, been modified in view of the existence at the present time of asphaltic preparations and other patented articles which make possible a watertight pipe line.

THE CIVIC PRESS

The American City Pamphlets.

The following additions to this series have recently appeared:

The Efficient Utilization of Water Storage Reservoirs. By George W. Fuller. No. 107. 10 cents.

The City's Need, the University's Opportunity. By Herman J. James, J. D., Ph. D. No. 108. 10 cents.

A Notable Development in Ornamental Street Lighting. By Walter C. Allen. No. 109. 10 cents.

Those previously issued are:

Water Consumption of Cities. The Effect of Meters on Water Consumption. (Tables.) No. 98. 10 cents.

Some Fundamentals of Housing Reform. By Dr. James Ford, Harvard University. No. 99. 15 cents.

How to Attack the Sewage and Garbage Problems. By Rudolph Hering, Consulting Engineer, New York City. No. 100. 10 cents.

The Esthetic Treatment of City Bridges. By Henry Grattan Tyrrell, C. E., Consulting Engineer, Evanston, Ill. No. 101. 15 cents.

How to Organize a City Planning Campaign. By Frederick Law Olmsted. No. 102. 15 cents.

Public Laundries in America. By Donald B. Armstrong, M. D., Superintendent Bureau of Public Health and Hygiene, New York Society for Improving the Condition of the Poor. No. 102a. 10 cents.

Refuse Disposal in Small Cities and Towns. By Samuel A. Greeley. No. 103. 10 cents.

The Duty of Municipal Food Inspection. By William P. Capes. No. 104. 10 cents.

Fighting Fires Before They Are Lit. By Martin H. Ray. No. 105. 10 cents.

How to Promote the Planting and Care of Shade Trees. By J. J. Levison. No. 106. 10 cents.

AMERICAN HIGHWAY ASSOCIATION.

Good Roads Year Book. (Edited by J. E. Pennypacker.) 1914. 501 pp. **$1.00**

A valuable reference book and guide to further study for legislators, engineers, contractors, road and street officials and others interested in road improvement. Chapters cover digest of state road laws; funds available in all states for the improvement of roads during 1914; the use of convict labor on public roads; bond issues; mileage; directories of state highway officials and manufacturers; types of roads; dust preventives; bibliography; description of foreign road systems; highway engineering in colleges; construction of bridges and culverts; progress reports from many states; review of papers and addresses appearing in technical magazines during 1913, and many other features.

CHASE, CHARLES P.

City Manager Plan. (Bulletin for March, 1914, of "Iowa Municipal Improvements," issued monthly by the Iowa Engineering Company.) **10 cents**

A statement in popular language of the meaning and advantages of the city manager plan of government. The concrete functions of a city manager are presented in detail.

WHITLOCK, BRAND.

Forty Years of It. 1914. 374 pp. **$1.62**

In the form of a personal narrative Mr. Whitlock traces the growth of the modern democratic spirit in the Middle West, notably in Toledo, Ohio, during the last forty years. The reader gains an intimate idea of many celebrities associated with Ohio municipal life, including Tom Johnson and "Golden Rule Jones," and follows the development of movements that have led to the establishment of municipal home rule, franchise reform, and other democratic features. The volume is unique in combining rare artistic and human interest with a serious study of the broader problems of municipal government.

DEPARTMENT OF PUBLIC WORKS, Bureau of Highways, Philadelphia.

Report on Service Test Road (Byberry and Bensalem Turnpike). November, 1913. 62 printed pages; 30 photographs **Free**

The data given describe the materials used, and give cost of materials and labor for the twenty-six different sections of the road. Thirty photographs show views before and after construction of the road, processes of construction, paving surface at different stages, and methods of handling material.

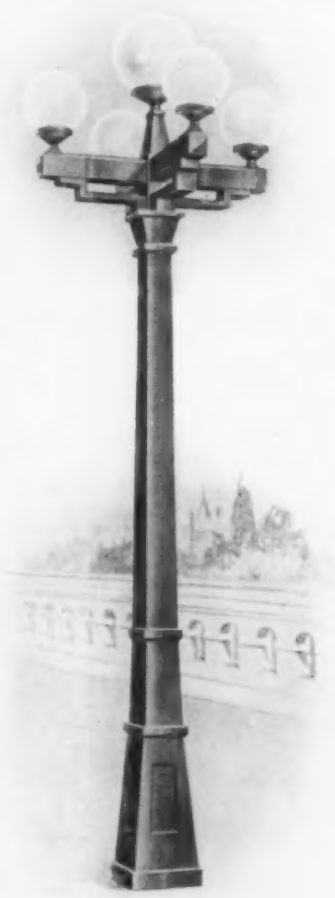
KERR, J. W., Assistant Surgeon General, and MOLL, A. A., A. B.

Communicable Diseases: An Analysis of the Laws and Regulations for the Control Thereof in Force in the United States. (Public Health Bulletin No. 62.) July, 1913. 699 pp. **50 cents**

One-fourth of the volume is devoted to chapters on federal laws relative to communicable diseases, and state and territorial laws. Lack of adequate appropriations for the use of health authorities in enforcing existing provisions is noted as being probably the weakest point in the machinery against disease in this country. Attention is also called to the need of greater uniformity in state and territorial regulations. The analysis covers every phase of communicable disease regulation, including its history, provisions as to immigrants, supervision of biologic products, investigations, quarantine, hospitals, disease transmission through animals, insects, shellfish, water supply, milk, etc., provisions as to bakeries, laundries, slaughterhouses, hotels, restaurants, public assemblages, sweatshops, barber shops, public institutions, factories, tenement houses, lodging houses, railroad sanitation, school sanitation; also penalties and prosecutions. An appendix in two parts gives the text (under subject headings) of court decisions in cases of special interest in which the control of communicable diseases was at issue, and the text of federal, state and territorial laws specifically relating to the control of communicable diseases enacted before July 1, 1913. Special provisions relative to cities with more than 100,000 inhabitants and provisions contained in city charters are not included.

Street Lighting Standards

In Many Attractive Designs



Let us estimate on your requirements before placing your order

HASTINGS FOUNDRY & IRON WORKS

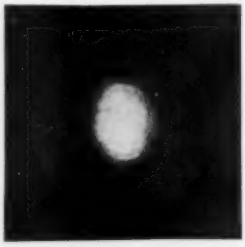
Hastings, Neb.

LIGHT UP

BUT DO IT

THE RIGHT WAY

THE appearance of ornamental lighting is often ruined by the use of the wrong kind of glassware. Ordinary glass balls, which in the daytime carry out the symmetry of an ornamental column—at night become ridiculous'y small splotches of light, *like this*



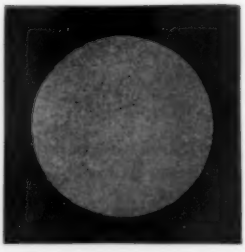
USE POLYCASE GLASS

REGISTERED

and you will have

UNIFORMLY LUMINOUS BALLS OF LIGHT

Like this



When **POLYCASE** balls are used the glass itself becomes the source of light, owing to the remarkable diffusing qualities of this glassware. In addition **POLYCASE** absorbs very little light.

GLEASON-TIEBOUT GLASS CO.

New York City San Francisco Chicago

Conventions and Exhibitions

ON THE CALENDAR

MAY 5-7.—CHICAGO, ILL.

National Fire Protection Association. Annual Meeting. Secretary, F. H. Wentworth, 87 Milk Street, Boston, Mass.

MAY 7-9.—WASHINGTON, D. C.

National Association for the Study and Prevention of Tuberculosis. Secretary, Livingston Farrand, M. D., 105 East Twenty-second Street, New York City.

MAY 8-15.—MEMPHIS, TENN.

National Conference of Charities and Correction. General Secretary, W. T. Cross, 315 Plymouth Court, Chicago, Ill.

MAY 11-15.—PHILADELPHIA, PA.

American Water Works Association. Annual Meeting. Secretary, J. M. Diven, 47 State Street, Troy, N. Y.

MAY 12-13.—NEW YORK CITY.

National Conference on Universities and Public Service. Held under the auspices of the Committee on Practical Training for Public Service of the American Political Science Association. Executive Secretary, Edward A. Fitzpatrick, Box 380, Madison, Wis.

MAY 14-15.—CHARLOTTE, N. C.

North Carolina Municipal Association. Annual Convention.

MAY 25-27.—TORONTO, CAN.

National Conference on City Planning. Secretary, Flavel Shurtleff, 19 Congress Street, Boston, Mass.

MAY 25-30.—WASHINGTON, D. C.

American Library Association. Secretary, George B. Utley, 78 East Washington Street, Chicago, Ill.

JUNE 1-5.—PHILADELPHIA, PA.

National Electric Light Association. Executive Secretary, T. Commerford Martin, 29 West Thirty-ninth Street, New York City.

JUNE 3-5.—AUBURN, N. Y.

Fifth Annual Conference of Mayors and Other City Officials of the State of New York. Secretary, William P. Capes, 105 East Twenty-second Street, New York City.

JUNE 9-19.—CHICAGO, ILL.

General Federation of Women's Clubs. Biennial Convention. Chairman Local Biennial Board, Mrs. George Bass, Fine Arts Building, Chicago, Ill.

Civic Exhibition, and City Planning Competition, Public

The principal object of the Civic Exhibition which will be held in Dublin, Ireland, during July and August, is to show Irish life as it is—its recent advances and its unsolved problems. In addition to the physical phases of town planning, with special attention to commercial and industrial development, the Exhibition will include material arranged to show its important legal and financial phases. Contributions to the Exhibit will be made by the Association of Municipal Authorities of Ireland, all the important towns and cities of that country, various Government departments, and many voluntary organizations.

There will be a series of conferences and lectures bearing upon every section of urban, rural and national welfare and development. A number of learned and influential men and women from Ireland and abroad have agreed to take part in these conferences. Competition in Irish national music, singing, folk dances, gymnastics, physical culture and debates will be held from time to time during the Exhibition, and it is expected to demonstrate the place of recreation in modern civic life.

Intimately associated with the Civic Exhibition is the project of a civic survey of Dublin—the first step toward the systematic improvement of that city. His Excellency the Earl of Aberdeen, Lord Lieutenant of Ireland, has offered a prize of £500 to be awarded to the author of the design for the replanning of Dublin which is placed first in order of merit by the adjudicators, Prof. Patrick Geddes of Edinburgh, Mr. John Nolen of Cambridge, Mass., and Mr. Charles McCarthy, Fellow of the Royal Institute of the Architects of Ireland, City Architect of Dublin. The object of the competition is to elicit plans and reports of a preliminary and suggestive character; it is not believed that the requirements and future development of Dublin can now be foreseen with sufficient definiteness and accuracy to justify the Committee in recommending for execution any of the town plans which may be submitted.

The Exhibition is under the auspices of

"BALTO"
GUARANTEED PORCELAIN ENAMELED IRON
SIGNS
We produce every possible character of municipal signs—any size, shape, color combination or design Without obligation our Service Department will be pleased to submit sketches and quotations. Additionally, we will send FREE, at our expense, to any authorized purchasing official or body a useful and attractive sample of finished Porcelain Enameled Iron.
Write Department C.
The Baltimore Enamel & Novelty Co.
BALTIMORE, MARYLAND
DANGER 5000 VOLTS
NOTICE NO ADMITTANCE KEEP OUT
LIBERTY ST.
5764
DANGER NO CLEARANCE
VT 5643 1913
DO NOT SPIT ON THE SIDEWALK FINE $2 TO $100
2012
8597 MD 13
E. GRANVILLE ST.
SLOW GOING VEHICLES MUST KEEP CLOSE TO THE CURB
625
DANGER RUN SLOW
N 866 H 1913
HOSPITAL ZONE
SUMNER AVE.
UNNECESSARY NOISES PROHIBITED
HEALTH DEPARTMENT 3 PERMIT

Carrying 30 feet 3" Socket Joint

Orangeburg Fibre Conduit

("Admitted to be the best Fibre Conduit.")

Made with four styles of joints: Socket, sleeve, screw and "Harrington," with bends and fittings for same.

Is the Lightest Conduit Made

(3" socket joint 1.2 lbs. per foot.)

hence the freight and cartage charges are reduced to the minimum.

Send for The Conduit Book

The Fibre Conduit Company

Main Office and Factory

Orangeburg, N. Y.

New York, 103 Park Ave.
Chicago, 1741 Monadnock Bldg.
Boston, S. B. Condit, Jr., Co.
Winnipeg, Can.
Tri-Provincial Supply Co.
Birmingham, Ala., McClary-Jemison Machinery Co.
Pierson-Roeding Co.
San Francisco, Cal.
Seattle, Wash.
Portland, Ore.
Los Angeles, Cal.
Salt Lake City, Utah
Bryant Zinc Co., Chicago, Ill.

the Civics Institute of Ireland, Limited. His Excellency the Lord Lieutenant is President of the Council, Her Excellency the Countess of Aberdeen is Chairman of the Executive Committee, Mr. John Nolen is Advisory Expert, Mr. George L. O'Connor is Director of the Exhibition, and Mr. Kevin J. Kenny is Commercial Manager. Correspondence regarding the town planning competition should be addressed to Eric Kaye-Parry, Esq., Secretary, Town Planning Competition, Civic Exhibition, Dublin, Ireland.

+ +

Universities and Public Service

At the call of Hon. John Purroy Mitchel, Mayor of New York City, a National Conference on Universities and Public Service will be held in New York City on May 12 and 13, under the auspices of the Committee on Practical Training of the American Political Science Association. The tentative program includes the following subjects:

Upbuilding of Governmental Administration—The Greatest Need of American Democracy; The Training Needed for My Job—(*a*) a high school principal, (*b*) a normal school president, (*c*) a president of a publicly-supported university; Public Service as a Career—(1) Present Status and Tendencies, (2) Civil Service Reform as a Factor in Making Public Service a Career, (3) The Occupation of College Graduates; The Municipal University—(1) The Ideal Municipal University, (2) The Movement for a Municipal University in Cleveland, (3) The Opportunity of the College of the City of New York, (4) What a College of Administration Might Do for New York; Public Service Activities of Universities; A Record of What is Being Done—(1) Privately Endowed Universities, (2) State Universities, (3) Municipal Universities; Practical Training for Public Service; Should Universities Give Credit for Work in Governmental Bureaus and Other Agencies as Outlined by the Committee on Practical Training for Public Service? The National University.

The discussion in each instance will be opened by a leader in the field of public service, of university education and of public opinion.

+ +

Program of the New York Mayors' Conference

Among the speakers at the fifth annual Conference of Mayors and Other City Officials of New York State, to be held in Auburn on June 3, 4 and 5, will be Governor Martin H. Glynn; Mayor John Purroy Mitchel, of New York City; State Health Commissioner Hermann Biggs; Lawson Purdy, President of the New York City Department of Assessment and Taxation; Robert S. Binkerd, Secretary of the City Club of New York; Joseph Hammitt, Chief of the New York City Fire Prevention Bureau; and Donald B. Armstrong, Superintendent of the Bureau of Public Health and Hygiene of New York City.

From outside of the state will come H. M. Waite, City Manager of Dayton, Ohio, who will discuss the advantages of the city manager plan of municipal government; and J. L. Beavers, Chief of Police of Atlanta, who will speak on the effect of Atlanta's campaign against the segregated district.

City planning will come up for special consideration at one of the sessions. Charles Downing Lay, former landscape architect of the New York City Park Department, will present a program of developing parks and playgrounds, and Prof. James S. Pray, of Harvard University, will talk about making the survey for a city plan. Professor Pray will discuss especially the plans for the state survey which the Conference is now making.

It is predicted that the meeting this year will be the largest and most important in the history of the organization. Copies of the complete program may be obtained of William P. Capes, Secretary, 105 East Twenty-second Street, New York.

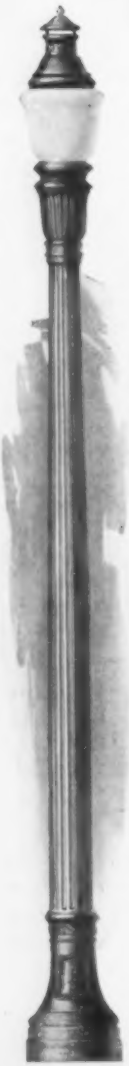
+ +

A Conference on Snow Removal

At the Philadelphia City Hall, on April 17, a gathering was held which seems likely to result in greater effectiveness in snow removal in more than one city next winter. The conference met at the invitation of Morris Llewellyn Cooke, Director of the Department of Public Works of Philadelphia. There were present city engineers, public works directors, superintendents of street cleaning and others interested in the snow removal problem from a representative list of cities in Pennsylvania and nearby states.

Among those who presented papers were J. G. Hayes, Director of Public Works, Scranton; Louis K. Rourke, Commissioner of Public Works, Boston; William H. Connell, Chief, Bureau of Highways, Philadelphia; E. D. Very, Consulting Engineer, New York; James Robinson, Superinten-

Make Your Business Streets Attractive



A progressive store is attractively furnished.

Likewise, a progressive city should have attractive streets.

ORNAMENTAL LIGHTING POLES

will greatly add to the appearance of your city both day and night.

They are made to fit the needs of every city and town. One of our twenty-five designs would be just the type pole for your city.

Let us plan a "White Way" for you. Send for our catalogue.

Ornamental Lighting Pole Company
112 Liberty Street, New York City

It Is Possible

to utilize an ordinary street railway pole in connection with ornamental bases and brackets to support either Mazda lamps or inverted luminous arc lamps.

You can string your wires along the top of the poles, where they are practically unnoticeable and out of the way of traffic.

You save the cost of additional lamp standards and underground construction, and avoid further obstruction of the curb line.

Catalog "D" describes this money-saving ERECO Plan—write for a copy

Electric Railway Equipment Co.

Cincinnati, Ohio

Designers Manufacturers

New York Office
30 CHURCH STREET

dent of Police, Philadelphia; Martin Schreiber, Engineer Maintenance of Ways, Public Service Railway Company of New Jersey; and Morris R. Sherrerd, Chief Engineer, Board of Street and Water Commissioners, Newark, N. J.

+ +

Massachusetts Conference on City and Town Development

At the invitation of Governor Walsh, there was held at Ford Hall, Boston, on April 4, a well-attended conference on city and town development. As announced on the program, the conference was for the purpose of "expressing the purpose of Massachusetts to contribute more actively to the progress and prosperity of her communities." The presiding officer of the meeting was John H. Fahey, President of the Chamber of Commerce of the United States, and the program was under the general direction of Benjamin M. Rastall, Director of the Municipal Service Bureau, of New York. James A. McKibben, of Boston, was Chairman of the Committee on Arrangements, and Emmet Hay Naylor, of Springfield, Mass., Secretary.

+ +

New Housing Organization in Pennsylvania

An organization to work for the improvement of housing conditions and the development of systematic community planning in Pennsylvania was effected on April 7 at a conference on housing conditions held in Harrisburg.

The following officers and directors were chosen:

President, Samuel S. Fels, Philadelphia
Vice-Presidents: C. P. Hill, Pittsburgh; D. W. Harper, Erie
Secretary, Sherrard Ewing, Reading
Treasurer, William Jennings, Harrisburg
Directors: Dr. Alexander M. Wilson, Miss Hannah Fox, Lewis Gersley, George W. Norris, Mrs. L. C. Maderia, Philadelphia; Dr. Carol Aronovici, Moylan; Francis Christy, Meadville; Ward Bonzall, G. W. Schwann, Mrs. Franklin P. Iams, C. E. Snyder, Pittsburgh; Miss Gertrude Lovell, Scranton; W. C. Howland, Johnstown; Mrs. Griffith, Easton; W. D. Prandon, Butler; L. Singmaster, Palmerton; John Gill, Franklin; G. I. Blake, Erie; A. B. Farquahar, York; W. S. Millener, Williamsport; Dr. F. N. Howell, John Mould, Reading; E. S. Templeton, Greenville; J. F. Findlay, Altoona; T. C. Wilson, Clarion; Mrs. W. K. Sharpe, Chambersburg; J. Horace McFarland and Dr. J. M. J. Raunick, Harrisburg.

Items of Municipal and Civic Progress

One Mile of Shade Trees

A prize has been offered by the Massachusetts Forestry Association for the revival of tree planting in Massachusetts. One mile of street or road will be planted by the Association to shade trees at least seven feet in height in the town or city which properly plants this spring the greatest number of shade trees on its streets in proportion to its population, based on the census of 1910.

RULES OF THE CONTEST

1. At least fifty towns and cities must have entered the contest, and all must notify the association of their intention to compete before July 1.

2. The prize will be awarded on the number of live trees on September 15, 1914, when the official count will be taken by the committee representing the town or city and reported to the association within one week of that date.

This provision is to eliminate trees improperly planted, and which have died from that or other cause during the summer.

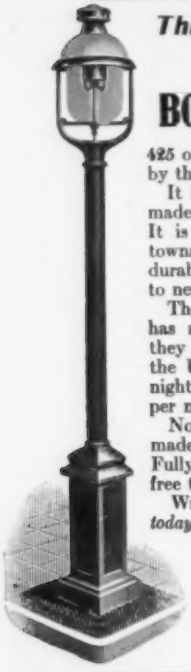
3. The report must be signed by the chairman of Selectmen and the Tree Warden, or in the case of a city, the Mayor and the officer in charge of the trees, or other parties especially appointed for this purpose by the Selectmen or the Mayor. These officers or such committee will constitute the official committee to represent the town or city.

4. The prize will be awarded by a competent committee appointed by the association, which will visit the town having the highest per cent, to check up the work, and if the planting is found unsatisfactory, the committee will have power to consider the city or town next highest in the list. The decision of this committee will be final. The trees must be of reasonable size and the work must be properly done in order to win the prize.

5. In case the winning town does not have a mile of street in one stretch which has not been planted to trees, the committee may plant 200 trees in different parts of the town or city. Further, if there is not space for the whole 200 trees or any part of them, the money which would have been spent in the planting of that number of trees may be turned into the treasury of said town or city to be used in the protection of its trees.

6. The committee of the Forestry Association will confer with the official committee of the town or city as to the location of the trees and the variety to be planted.

7. The trees will be planted this fall or not later than the following spring, the time most propitious being left to the judgment of the committee of the Forestry Association.



This is the

COLEMAN BOULEVARD LAMP

425 of which were recently purchased by the city of Des Moines, Iowa.

It is a high pressure gasoline lamp made both 300 and 1000 candle power. It is adapted to suburban use and towns of medium size. It is simple, durable, economical and easily moved to new locations.

The low cost to install and operate has made these lamps popular and they are used by hundreds of cities in the United States and Canada. All night service 5c., midnight service 3c. per night.

Nothing to wear out or rust out, made of cast iron, brass and copper. Fully guaranteed and sent on 30 days' free trial.

Write for catalog and full particulars *today*.

THE

Coleman Lamp Co.

Wichita, Kansas

Toledo, Ohio St. Paul, Minn.

From photograph of night scene in Michigan City, Ind.

"WHITE WAY" TILL MIDNIGHT GLOW TILL DAYLIGHT

Your street lighting system should be efficient as well as artistic. A "Great White Way" in the mercantile district of your city will meet the demands of congested street traffic until eleven or twelve o'clock. Then the pendent lamps should be turned off, the top lamps burning till daylight. If you let us lay out your system

THE "CUTTER" WAY

it will operate at minimum cost.

CUTTER ORNAMENTAL POSTS

are distinctly artistic and efficient. Write for illustrated booklet and prices.

GEORGE CUTTER COMPANY

Main Office and Factory:
413 Notre Dame Street
South Bend, Ind.

Eastern Office:
258 Broadway
New York City

Lundin Ornamental Standards and Brackets

HAVE BEEN ESPECIALLY DESIGNED FOR USE WITH

General Electric Luminous Arc Lamps

They are highly artistic, simple in construction and very durable. These standards have been adopted by a large number of cities.

A PARTIAL LIST

Boston, Mass.	Rochester, N. Y.
Providence, R. I.	Nashua, N. H.
Baltimore, Md.	Newport News, Va.
Fall River, Mass.	Calgary, Canada
Haverhill, Mass.	Cambridge, Mass.
Cleveland, Ohio	Worcester, Mass.
Toledo, Ohio	Lynn, Mass.

and many others

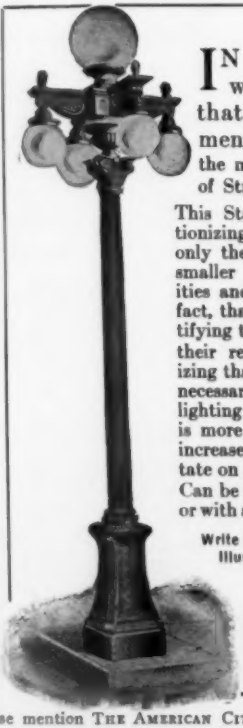
We have recently furnished 1500 Standards and Brackets in Providence, R. I.

SPECIAL DESIGNS SUBMITTED

Send for Catalog No. 11

LUNDIN ELECTRIC AND MACHINE CO.

No. 4031 ***Boston : Massachusetts***



IN our Ionic Design we offer a standard that is not only ornamental but will give the most Uniform System of Street Lighting.

This Standard is fast revolutionizing street lighting in not only the larger cities but the smaller towns and municipalities and all are waking up to fact, that this means of beautifying the street is not beyond their reach. They are realizing that the small investment necessary to secure adequate lighting through our Standard is more than justified by the increased valuation of real estate on the streets affected.

Can be furnished as illustrated or with all lights turned upright.

Write for Prices and Catalogue Illustrating Full Line

The Casey-Hedges Co.

CHATTANOOGA, Tennessee

This is a matter of interest to branch forestry associations, women's clubs, boards of trade, civic and horticultural societies, granges and schools. Bulletins Nos. 108 and 110 of the Massachusetts Forestry Association (4 Joy Street, Boston, Mass.) give suggestions in connection with the contest.

+ +

Success of San Francisco's Municipal Railway

A financial report of the first year's operation of the Geary Street Municipal Railway has been submitted to the Board of Supervisors of San Francisco by William Dolge, Certified Public Accountant. This report, which is available in pamphlet form, shows a surplus from the year's operation of $85,345.80. This surplus is left after deducting 14 per cent of the gross operating revenues as a reserve for depreciation and renewals, and an additional 4 per cent for injuries and accidents.

In order to make a fair comparison the charter provides that taxes shall be computed on the same basis as for a privately owned utility, and also that allowance shall be made for legal and clerical services rendered by other departments of the municipal government. These deductions amount to $35,454 and $4,587.33 respectively. Subtracting them from the surplus above mentioned, there remains a net profit for the year of $45,304.47. It should be added that more than 90 per cent of the surplus was accumulated during the last six months of the year, operation to the ferries not having been begun until June 24, 1913.

The total cost of the road and equipment to December 31, 1913, was $1,657,251.38.

+ +

Building Regulation by Height and Use Authorized for New York City

Mayor Mitchel and Governor Glynn have signed the act passed by the recently adjourned session of the New York Legislature, giving the city of New York authority to regulate the size and use of buildings.

The act provides that the Board of Estimate and Apportionment shall have power to regulate and limit the height and bulk of buildings hereafter erected and to regulate and determine the area of yards, courts and other open spaces. The Board may divide the city into districts of such number, shape and area as it may deem advisable; the regulations to be uniform for each class of buildings throughout each district. The Board is also given power to regulate and restrict the location of trades and industries and the location of buildings designed for specified uses.

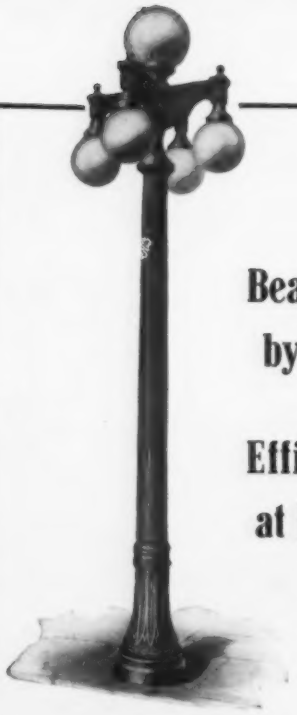
The act provides that a commission shall be appointed to recommend the boundaries of districts and appropriate regulations and restrictions to be imposed therein. Reasonable consideration must be given, among other things, to the character of the district, its peculiar suitability for particular uses, the conservation of property values, and the direction of building development in accord with a well-considered plan. The regulations must be designed to promote the public health, safety and general welfare.

+ +

The First State Recreational Inquiry Committee

California is the first state to create a commission for the study of recreation. The Recreational Inquiry Committee was appointed last December to investigate and report, with recommendations, upon recreation for both old and young, the study to cover rural communities as well as small and large towns and cities. Five members are appointed by the Governor, one by the President of the Senate, and one by the Speaker of the House of Representatives. The following are the commissioners selected; Herbert Jones, attorney, San José; Judge Peairs, Los Angeles; Dr. C. A. Stebbins, Chico State Normal; Dr. Grace Fernald, Juvenile Court, Los Angeles; Miss Bessie Stoddard, Playground Commission, Los Angeles; August Vollmer, Chief of Police, Berkeley; James Edward Rogers, Field Secretary Playground and Recreation Association of America and Secretary Recreation League, San Francisco.

The initial meeting was held in the office of the Playground and Recreation Association of America, San Francisco, January 2, 1914. The Commission will report to the Legislature not later than November, 1914, with recommendations on matters of legislation.



Beautiful by Day

Efficient at Night

At night our designs afford the most satisfactory and efficient method of illumination. In the day these beautiful and ornamental poles add much to the dignity and attractiveness of your city's streets. Let us co-operate with you in the planning of a "Great White Way" that will reflect the fullest credit upon you.

M10

ELMER P. MORRIS IRON WORKS

136 LIBERTY ST., N. Y., REPRESENTING

CENTRAL FOUNDRY COMPANY

NEW YORK

The Stephenson System of Underground Refuse Disposal

keeps your garbage out of sight in the ground, away from the cats, dogs and typhoid fly.

Opens with the foot. **Hands** never touch.

THE STEPHENSON LYNN MASS.

Underground Garbage and Refuse Receivers

A **Fireproof, sanitary** disposal for oily waste and sweepings in your garage.

Our Underground Earth Closet means freedom from polluted water.

Sold Direct. Send for Catalogue.

Beware of Imitations.

In use 10 yrs. It pays to look us up.

Thousands of users.

C. H. STEPHENSON, Mfr.

43 Farrar St., Lynn, Mass.

CONCRETE LIGHTING STANDARDS

They never rot, rust, nor wear and require neither painting nor repairs.

CATALOG FREE

PETTYJOHN CO.

577 N. 6th St.

TERRE HAUTE, IND.

Street and ParkLighting Our Specialty

For fifteen years we have manufactured lighting fixtures for every class of exterior electric or gas requirements. Our catalogue may show just the design for which you have been looking. Let us have your address.

The Morris Iron and Steel Company

Formerly The Morris Iron Co.

NEW YORK OFFICE: 50 CHURCH ST.

J. W. BACHE, General Eastern Agent
Phone: Cortlandt 1356

W. ST CLAIR JONES, Boston Rep.,
79 North Street

J. QUARLES, Baltimore, Rep
619 Munsey Building

OFFICE AND FOUNDRY: Frederick, Md.

Commission Government and City Manager News

Since the last report in THE AMERICAN CITY, commission government has been adopted by Greenville, Mich., Irvington and Orange, N. J., Florence, Ore., and Coleman, Texas.

The Legislature of New York State has granted to the city of Olean a charter providing for the city manager form of commission government. This is the first charter of the kind in the state.

Caldwell, Kans., and MacAlester, Okla., have held special elections to decide whether they should return to the old form of municipal government, with a victory in each case for the commission form.

+ +

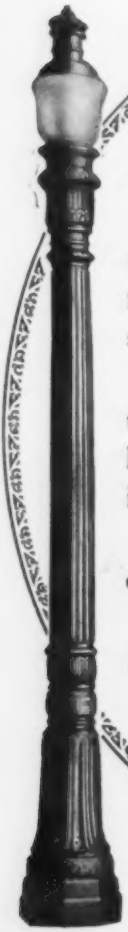
Civic Patriotism and Party Lines

That political differences may disappear before ideas of civic progress and business administration was attested at the inauguration of Marshall B. Lloyd as Mayor of Menominee, Mich., on the 20th of last month. Mr. Lloyd, head of a large manufacturing company, was elected on a platform of clean-cut business administration and civic progress. Following the election the employes of the Lloyd factory decided upon a parade to conduct the new Mayor to the City Hall on the night of his inauguration. A small fund of money collected among the workingmen made possible the purchase of red fire and the hiring of a band. By the time, however, that the original parade had reached the downtown district, its numbers had been swelled to 7,000—more than half the population of the town. So great was the crowd scrambling for admission to the council chambers to hear the Mayor's inaugural address, that the aldermen adjourned to the band stand. Thereupon a unique council meeting took place in the open air, at which the leader elected on a Republican ticket was introduced by the leader of the Democratic forces of the city. To the citizens spontaneously gathered to-

SCENE ON THE STREETS OF MENOMINEE, MICH., AT THE INAUGURATION OF MAYOR LLOYD

City Attorney O'Hara, Democratic leader, introducing the Republican Mayor to more than 7,000 people attending the Council meeting

An attractive business section is a business asset



It is a well known fact that where there is plenty of light, there you will find activity and trade. It is the brightly lighted thoroughfares that bring the business; trade naturally follows the light.

Make your business section a busy section; bring the people down town at night; attract the trade from adjacent towns and villages; enliven the streets and give your city the appearance of prosperity.

Call the business men together and put up to them the proposition of a well-lighted city; show them how a "white way" is a real business asset and a good investment.

Install Ornamental Luminous Arc Lamps as hundreds of progressive cities are now doing.

These lamps give a beautiful, white light and the illumination though brilliant is well diffused.

The artistic poles lend themselves to a large variety of designs—making the appearance of the streets attractive by day as well as night.

Bulletin No. 4955 gives details of this most modern method of street lighting. Send for your copy today.

General Electric Company

Largest Electrical Manufacturers in the World

General Office: Schenectady, N. Y.

493

Sales Offices in all large cities

When writing to Advertisers please mention THE AMERICAN CITY.

gether in his support without regard to party affiliations, the Mayor outlined a plan for cleaning up and painting up the city, planting trees and flowers, and other measures designed to get the city in line for real civic progress. As a final indication of good fellowship, upon the adjournment of the Council the Mayor and his supporters joined in an outdoor dance on the brick pavements.

Municipal Progress in New Jersey

By Charles O'Connor Hennessy
State Senator

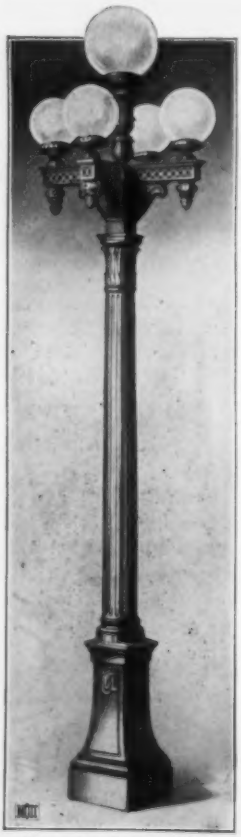
FROM the standpoint of municipal reformers, perhaps the most important results of the legislative session recently ended at Trenton are to be found in the enactment of laws for the enlargement of the powers of commission government municipalities, and for promoting simplicity in the selection of commissioners. By one bill (known as Senate 259) primaries for the selection of candidates in the municipalities that are now or that may hereafter be governed in the commission form, are done away with. Nominations hereafter are to be made directly by petition. The candidates' names will be printed in alphabetical order on the ballot, which will provide for a first, second, third and "other choices" in the preferential form. Nothing on the ballot is to indicate the source of a candidacy nor any political designation or mark.

A companion act (known as Senate 290) is one which amends the so-called Walsh Commission Government Act of 1911 in such manner as to explicitly define and amplify the powers of all municipalities that may adopt the commission form of government. The amendment, in substance, provides that such municipalities shall be in a class by themselves, having the benefits of home rule, with power to do "any act or thing which the governing body thereof might deem necessary or desirable unless forbidden by the constitution of this state, or by laws applicable to all municipalities of this state, and subject to the rights of the voters of such municipalities (initiative, referendum and recall) as provided in said act."

The broad grant of power given in this act has created a sensation in some quarters, and questions respecting the constitutionality of the new law are being raised. It seems that its importance was not realized during its passage through the legislature. The Governor of the state has been asked to call a special session of the legislature to amend or repeal the act, which he has declined to do. Its scope and constitutionality, it is understood, will be soon tested in the courts. If it is sustained, there can be no doubt that New Jersey municipalities will have the greatest measure of home rule given by any state in the Union, and the adoption of the commission form of government by all classes of municipalities throughout the state will naturally follow. Already a movement is on foot to adopt commission government in Newark, the largest city of the state. Trenton, Jersey City, Long Branch and Atlantic City are among the large cities already operating under this form.

Another significant action of the New Jersey legislature was the adoption of a concurrent resolution, proposing an amendment to the constitution, granting the broadest measure of local self-government to every municipality of the state without respect to the commission government proposition. The proposed amendment declares that hereafter the inhabitants of every municipality shall have "power to determine, organize and alter, in such manner as they shall by vote prescribe, the system and form of its government not inconsistent with the constitution of this state or of the United States." This amendment must be readopted at the next session of the legislature, and will then be submitted to the people for ratification in 1915.

EDITOR'S NOTE: Senator Hennessy is well known, through his service for two years in the lower house of the New Jersey legislature, as not only a conspicuous advocate of the so-called Wilson policies, but as a consistent promoter of legislation to enlarge the powers of municipalities. One of the acts put through the legislature last year by him was that which enlarged the uses of the public schools as social centres and places for all sorts of meetings. He was the author this year of Senate bills that have become law to simplify and enlarge the powers of commission government municipalities.



Tungsten Post—2006 J.

Mott Lamp Posts

for Arc and Tungsten Lamps

The Standard of Merit

Established 1828

¶ The best is always the cheapest, for that reason the Leading Cities have installed our Lamp Posts.

¶ There are over 21,000 Lamp Posts of our manufacture now in use throughout Greater New York.

¶ Send for Catalogs and prices.

BEAUTIFY YOUR CITY OR TOWN with a Mott Display Fountain

¶ Write now for special prices.

Display Fountains
Drinking Fountains
Settees for Parks,
City Squares, Etc.

Write for Catalogs and prices

Ornamental Display Fountains for Public Parks and City Squares

The J. L. Mott Iron Works *5th Ave. and 17th St. NEW YORK CITY*

Municipal Conduits and Public Utility Control

To the Editor of THE AMERICAN CITY:

One great problem confronting most municipalities is how to develop and get the proper return from their resources, created by the necessities of the people in public utilities.

It is estimated that fully 83 per cent of the resources from which a municipality should get a return have been given over to private corporations, with little or no compensation for the values so given. I refer especially to the franchises for water, light, power, gas and local transportation, such as trolley service. These franchises should be profit returning, or at least profit sharing, in every community in which such utilities operate. While many cities are face to face with the fact that their franchises for electric light and power, gas and telephone service have been given away to corporations operating locally or in large sections, there is one last opportunity for many such towns to retain some of their natural increment for their own use and profit.

I refer now to a system of underground conduits which, to my mind, is the only hope of our towns and cities to hold an effective trading position with the public utilities which use wires to serve their patrons. By constructing a system of conduits and renting same to the telephone, telegraph and electric light and power companies, the municipality would control these service conduits. It would thus be in a position to exact a fair bargain from the companies which, sooner or later, must run their wires through underground conduits, whether built by themselves or by the municipality. Then, with a provision in the contract giving the municipality the right to purchase the wires during or at the expiration of the lease, and with an ordinance requiring that wires be placed under ground, the municipality could control the situation. Under such a system of conduit control the municipality could readily build a station and install wires, or purchase those already in the conduits from the service companies and produce its own power and light; otherwise, as the demand for underground wiring increases and conduit systems built up by the electric light and telephone companies are extended, it would be very expensive and impractical for a municipality to again tear up the streets to install a municipal system.

Electrical engineers agree that the development in electricity is so rapid that within a few years we may heat our homes with electricity at no greater cost than by the present systems. This fact places an added emphasis on the advisability of carefully considering a means of controlling the channels through which such power is distributed.

ARTHUR N. PIERSON.

Westfield, N. J., March 13, 1914.

[While it is desirable from many points of view that cities should construct and own systems of underground electrical conduits to accommodate the several public utilities having transmission wires in the streets, there are certain features of the problem to which Mr. Pierson has perhaps not given sufficient consideration.

A company having a franchise to maintain its wires in the streets undoubtedly may be required, under the police power, to put those wires underground. If the city provides a system of conduits, the companies undoubtedly could be made to use these conduits and pay a rental for such use. It seems very unlikely, however, that the courts would sustain a city in imposing a rental large enough to include a substantial profit to the city over and above the interest and sinking fund charges and maintenance cost of the conduits.

In other words, the city could not, by the device of forcing the companies to use municipal conduits, substantially change the relation of the companies to the municipality with reference to profit sharing. Moreover, the city would not have the right to force the companies to use the conduits and at the same time require that as a condition of such use the companies should give the city the option to buy their wires. The city could not, by the exercise of the police power in forcing wires underground, substantially change the duration of existing franchises or the companies' financial obligations to the municipality. We think, therefore, that Mr. Pierson indulges in an exaggerated hope of the usefulness of the municipal conduit scheme in bringing about a substantial change in existing relations between cities and franchise-holding companies.

The real advantage in the municipal ownership of the underground electrical conduits is that it prevents the wire-using companies from getting a stronger grip upon the streets than they now have, whereas the policy of forcing wires underground in conduits to be constructed by the companies themselves inevitably strengthens the position of the companies in reference to the future.

The policy of constructing a system of municipal conduits is important, therefore, (1) as a means of hastening the elimination of the overhead wire nuisance, (2) as a means of coördinating and keeping under control the uses of underground space, with the result of minimizing the destruction of pavements, and (3) as a means of preventing franchise-holding companies from strengthening their hold upon the streets as against the city.—THE EDITOR.]

ENDORSEMENT BY UNITED STATES GOVERNMENT OF

Tothill's Patent Playground Athletic Slide

(A line of children eagerly awaiting a turn on the Athletic Slide)

Patented

Infringement on Patent will be prosecuted

(Illustration showing Athletic Slide at Max Bentzer Playground Chicago)

United States Bureau of Education

Bulletin 1912, No. 16, Page 19, Whole number 488

The Reorganized School Playground

By Henry S. Curtis

The Slide is one of the most popular pieces of Apparatus and will be used almost continuously by a large number of children. There are apt to be disputes and quarrels over the swing but the slide offers a natural rotation in office. Sliding represents a universal interest of children for they have slid down banisters and cellar doors from time immemorial. Almost every place that offers a natural incline in the cities will be found to be used by them. People generally have the idea that the slide is dangerous on account of its height, but in an experience of 13 years I have never known of a single serious accident from the slide except from slivers in the early days, when slides were made of pine. Railings at the top prevent the children from falling off there and after they sit down on the slide, they can not well fall unless they try to. There is a general feeling also that the slide is very hard on clothes.

I doubt if this is so, if the slide is in good condition. The amount of the friction and wear, of course, depends on the smoothness. Even in the schoolroom the child wriggles around constantly in his seat and the seat or cushion is not usually very smooth, the children tend to run up the slide if they are not watched at first, and also to slide down standing up. If a slide is scratched and marked with nails, it is much more destructive of clothes. The crucial thing about it is the condition of the incline itself. In the early days these slides were often made of pine. The pine could be made very smooth and safe, but after a rain the grain was likely to come up, so that the child might be impaled on slivers as he slid down, most of the machine companies now make a steel slide. This is well galvanized but the galvanizing is apt to wear through where the children place their feet causing the metal to rust. A rusty slide both soils and wears the clothes very rapidly. The steel is too cold in winter and too hot in summer for much comfort. It is also too expensive to be generally purchased. W. S. Tothill of Chicago makes a maple slide that answers all requirements very well. It does not rust or splinter it is not too hot or too cold; it sometimes warps but never seriously. The slide needs to be waxed occasionally or dressed with raw linseed oil. It is well to have a carpet mat, or two to sit on after oiling, and it is desirable so that the apparatus should be made so that the sliding board is detachable, allowing it to be turned over or taken in so as to protect it from the rain and dew

W. S. TOTHILL, World's Leading Manufacturer :: of Playground Apparatus :: Tothill Bldg., Chicago, Ill.

A Printed Report was recently issued by the City of Orange, New Jersey. Some important features, as devised by our firm, were:

Balance Sheets for Different Departments; A Classified Budget; Five-Year Comparisons of Receipts and Expenditures by Departments. A leading New York daily paper called it "A Perfect Municipal Report." Would you care to have us send you a copy? Write us!

PERINE & NICHOLS,

Municipal Clients Everywhere.

149 Broadway, New York City.

Experienced as Accountants Since 1898.

TRAUTWINE'S

CIVIL ENGINEER'S POCKET-BOOK

Price, $5.00 Net.

TRAUTWINE COMPANY, 257 S. 4th Street, PHILADELPHIA

VOCATIONS FOR GIRLS

By E. W. Weaver

A book to help the right girl find the right place. The author is an authority on the subject. 12 mo. Cloth. 75 cents Net.

The A. S. Barnes Co. - New York

Shall we send you our

Selected List of Municipal and Civic Books?

AMERICAN CITY BUREAU

87 Nassau Street New York

Methods, Materials and Appliances

News from Engineers, Manufacturers and Supply Houses

Protecting the Lawns and Flower Beds

Excelsior rust-proof flower guards are widely used in parks, cemeteries and public grounds where an attractive protection is needed for flowers. They support themselves in the ground without posts or stakes, and are high enough to exclude small animals without in any way marring the beauty or symmetry of the flower beds. Their open mesh permits the sun to reach all parts of the bed and it does not hide the flowers from view, while the soft silver grey finish harmonizes well with the flowers and plants and serves to set off their beauty. A feature which strongly appeals to the caretaker of these grounds is that the guards may be taken up, moved to other locations and adapted to any shape of bed with perfect ease. They can be left out all winter, and used to help retain leaves or covering matter over the flowers, as their rust-proof finish protects them against snow or rain; or they may be stored during the winter and used again the next season.

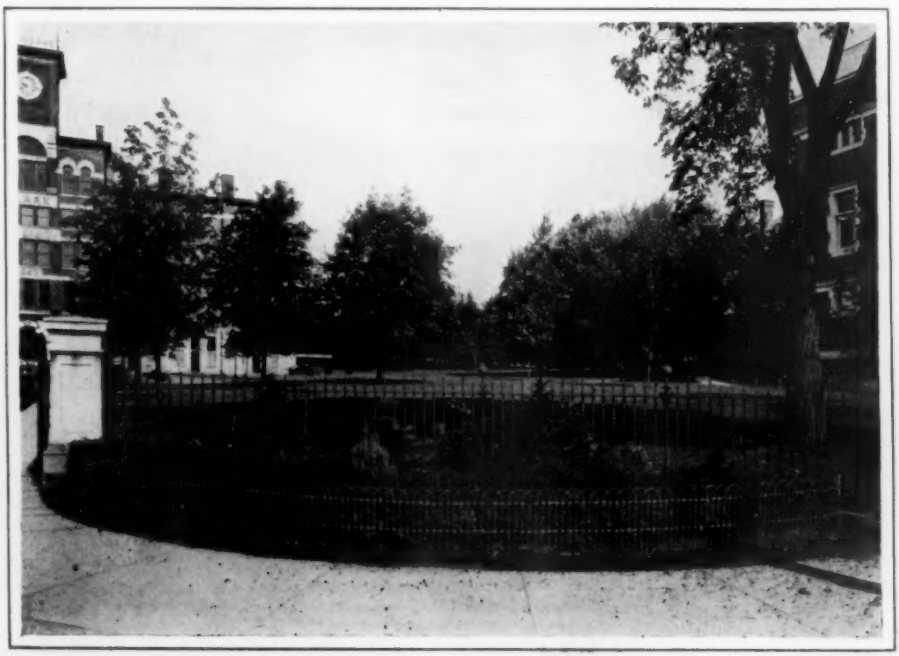
The fences are offered in any height from 3 feet to 8 feet, and are usually installed upon galvanized iron framework, although posts of wood, stone or concrete can be used with perfect ease. These fences possess the same general features as the flower guards, and are strong, durable and of a light and attractive design, which protects without obscuring the view or shutting off light and air. They can be satisfactorily installed by local labor, but in New England and nearby points the manufacturers, the Wright Wire Company, of Worcester, Mass., will send men to put them up complete when desired.

All Excelsior goods are made of large, smooth wires, with every intersection rigidly secured by a patent steel clamp. The fabrics are dipped in a bath of pure melted zinc after they are made, so that they are covered with an extra heavy coating of galvanizing, which keeps them rust-proof for many years under severe conditions.

✣ ✣

Destroying Weeds

The Modoc weed killer, made by the Scientific Spraying Company, of Philadelphia, is an



WIRE GUARD FOR PUBLIC GARDEN

Cyclone-Waukegan Sanitary Fence

THIS PICTURE is a photographic view of an alley and back yard in the city of Baltimore. Property owners and officials co-operate to improve the sanitary condition of the city by erecting CYCLONE SANITARY FENCE in place of the dilapidated board fences they tear down. In many other cities like movements are in progress and in every instance disease and fly-breeding conditions disappear.

Banishes Disease Breeding Conditions from Back Yards and Alleys

CYCLONE SANITARY FENCE makes a permanent improvement. It is built extra strong of heavily galvanized wire closely and firmly woven. Not affected by weather; permits easy inspection of the premises; is easy to erect and costs less than wood.

Built in various designs and heights. Fully guaranteed. *Write for FREE Illustrated Catalog.*

CYCLONE FENCE COMPANY
Dept. 107 Waukegan, Ill.

McINTIRE AVE.

There is no better sign manufactured, no matter what you pay for it. There is no enamel to crack. No surface to wear off. Positively Rust-Proof. Nothing to break or wear out.

INDESTRUCTIBLE METAL SIGNS

Once used, always used. Guaranteed Absolutely to be Perfectly Legible for a Hundred Years.

Before you place your order for signs get in touch with us. Agents wanted in unoccupied territory.

BROADWAY

THE INDESTRUCTIBLE SIGN CO.
528 Dennison Avenue Columbus, Ohio
THE GOOD ROADS MACHINERY CO., Selling Agents, KENNETT SQ., PA.

WE SPECIALIZE ON

Iron Fence, Settees and Vases

for Parks, Playgrounds, Schoolyards, Cemeteries, Reservoirs, Residences, etc., etc. Get our prices. Catalog on request showing over 200 Designs.

Cincinnati Iron Fence Co.
Dept. V, Box 724 Cincinnati, Ohio

Aphine Manufacturing Co.
Mfrs. of Agricultural Chemicals
MADISON, N. J.

APHINE—Insecticide
FUNGINE—Fungicide
VERMINE—Vermicide

SCALINE (a scalicide and insecticide combined, an oil and sulphur composition) will effectively destroy San Jose and other scale on trees, shrubs and hardy plants in the dormant season—and aphis, red spider, thrips and all sap-sucking insects in the growing season. An infallible remedy against the red spider pest now doing so much damage to evergreens.

Let us send you a sample and particulars

old standard preparation with a new name. It is a combination of powerful chemicals. Its action is quick and permanent; it leaves the surface, to which it is applied, in its original condition, eliminating the labor and cost of leveling, top dressing, etc., which follows hand weeding. It will not mar bricks or stone, and it helps to destroy ants, grubs, etc.; it has a tendency to preserve wood and prevent rust on iron. This preparation is useful for street and park authorities, for country clubs and private estates, to keep streets, roadways, gutters, walks, tennis courts, etc., free from weeds and other objectionable vegetation. It can be applied with an ordinary watering can or with a street sprinkler, and is claimed to kill all vegetation to which it is applied within forty-eight hours.

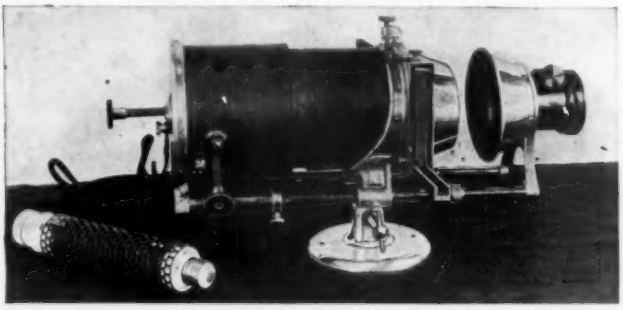
venient handling one of the new Silver or Daylight screens is recommended.

A New Tractor for Bayonne

The city of Bayonne, N. J., has ordered from the C. J. Cross Front Drive Tractor Company a front-drive two-wheel tractor for its aerial truck, to cost $4,000.

Getting Ready for the Dusty Season

An interesting illustrated booklet on Solvay granulated calcium chloride is issued by the Semet-Solvay Company, of Syracuse, N. Y. It gives the story of the improvement of dust-laying methods to meet the requirements of modern traffic, and recommends Solvay as a clean, efficient dust layer. Solvay granulated calcium chloride is known to chemists as a neutral hygroscopic salt, as harmless as table salt. It will readily absorb from one and one-half to two times its own weight of moisture from the atmosphere. When applied to a road it soon becomes incorporated with the surface, keeping it in a smooth, slightly damp and compact condition. Under the hot rays of the sun a road treated with Solvay will dry out to a certain extent, and when evening comes will again absorb its full quota of water, which will carry it through the next day. Under ordinary conditions one application will last approximately six weeks. The second application should not be delayed until the road is again dusty, as the action is cumulative, and the second application will combine with what is left of the first, producing even better results. For parks or private estates two applications should last through the season, but in towns and cities where the traffic is heavier a third application may be necessary. Solvay is odorless and has no effect on rubber. Its cost should not be more than 2½ to 3½ cents per square yard per season. It is an excellent germicide and weed killer, and is applied both by machine and by hand.



A STEREOPTICON FOR HOME AND PUBLIC USE

The "Compact" Stereopticon

This instrument is the result of long effort to produce a small, inexpensive lantern that would embrace the advantages of a large outfit without being cumbersome in transportation and complicated in its workings. It is manufactured by the Lantern Department of the J. Horace McFarland Company, of Harrisburg, Pa. For the small hall, church, schoolroom, lodge-room or home it is as efficient as it is compact. It is shown by the table of lenses and distances from the screen that perfect pictures are obtainable from 4 to 12 square feet. The "Compact" is a complete electric arc stereopticon, weighing only 12 pounds with the case and accessories. Every adjustment for efficient results is provided, and all parts are finely finished. It does not require special wiring, as it works from any chandelier or socket on direct or alternating current. It can be set up in one minute. The outfit consists of the lantern, a double-end slide carrier for American and English slides, two carbon holders, cord and attachment, plug and carrying case of hardwood covered with weather-proof material. Any smooth white surface, plastered wall or sheet will serve for a screen, but for best results and most con-

TO ALL WHO ARE INTERESTED IN CLEAN STREETS

STREET CLEANING COMMITTEES

TOWN, VILLAGE, AND DISTRICT IMPROVEMENT ASSOCIATIONS

CITY AND TOWN OFFICIALS

Nothing is more unsightly than streets, squares and other public places filled with paper and other unsightly material being eddied and blown about by every gust of wind. Provide proper receptacles for this litter.

CIVIC PRIDE RUBBISH CANS

Can patented. Name copyrighted.

Can be affixed to any post. Cannot be tipped over. Wind cannot scoop out the contents. Cannot be accidentally opened. Painted any color, and lettered as ordered.

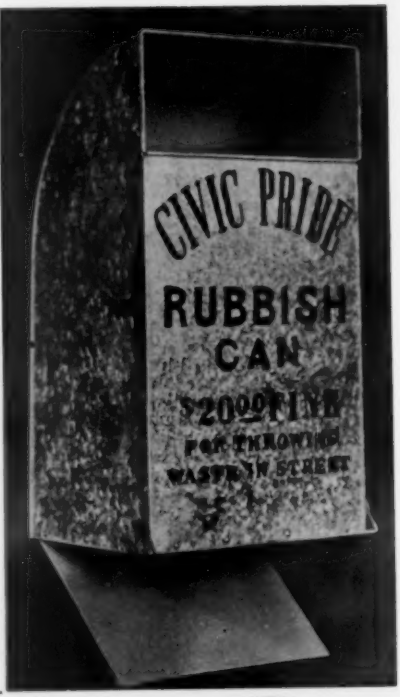
Neat--Attractive--Efficient

Endorsed by Public Officials and Civic Improvement Associations throughout the country.

Manufactured by

The Dyar Supply Co.

66 BROADWAY Cambridge, Mass.



IRON HORSE BRAND

STREET CANS

Used on Portable Carts for Collection of Street Sweepings and other Rubbish

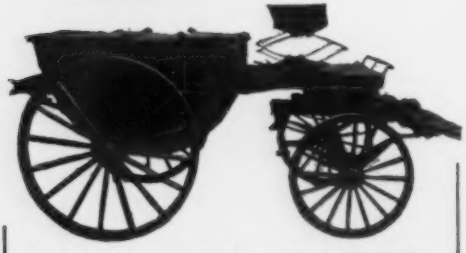
Rubbish Cans of all kinds

Garbage Cans and Pails

Ash and Waste Cans

ROCHESTER CAN COMPANY

ROCHESTER, N. Y.



SANITARY CARTS

(Patented)

For Garbage, Night Soil, Material from Sewers, Inlets, Etc.

MADE FOR 1 OR 2 HORSES. Write for Catalogue

GEO. H. HOLZBOG & BRO., Jeffersonville, Indiana

THE SANITARY GARBAGE PAIL is recommended by health authorities to be the most cleanly solution of the problem ever placed on the market. It is germ proof and fly-proof. Takes up practically no room and defies the stray dogs and cats.

Send for illustrated circular, prices and full information to

W. D. Drummond

Pawtucket, R. I.

New Developments in Ornamental Street Lighting

Ornamentation and harmony are of importance in street lighting systems for central localities of cities, but the main object is the lighting of the street. A lighting unit to be of maximum usefulness, in addition to producing a light of sufficient uniform intensity on the street, should illuminate the façades of buildings. In no case, however, should the street lighting fall second to any other consideration. The installation and maintenance costs per candlepower, or per unit of illuminated area, must be a minimum.

A unit which meets these conditions to an exceptional degree has recently been developed by the Holophane Works of the General Electric Company, and the accompanying photographs show its contour and its appearance when mounted on a standard. The uniformity of distribution is shown in the night picture. The lines are such as to harmonize with the various types of architecture commonly encountered in business districts.

THE NEW GLOBE IN USE

A LARGER VIEW OF THE GLOBE

The enclosing globe was designed with reference to the latest development in Mazda lamps. The upper portion is made of heavy-density opal glass, which serves as a reflector in directing the light on the street surface, and yet transmits a portion to illuminate the building façades. The lower part is made of crystal roughed inside glass, which serves the double purpose of transmitting the direct light with the least amount of absorption and of cutting the glare effect of the bright light source to a minimum. The maximum candle-power is such that with average spacing distance, say between 75 and 90 feet, the illumination will come well within ideal limits. The maximum candle-power is at an angle of 65 degrees from the vertical.

The unit is of low installation and maintenance cost. The first cost of the lamp equipped with globe and standard is less than the cost of an ornamental cluster and considerably less than any ornamental post including arc lamps.

+ +

Testing a Fire Engine

In an official test recently made at Cleveland, Ohio, the Ahrens-Fox auto fire engine, shown on page 459, delivered 880 gallons a minute. A line of hose was stretched from the fireboat dock to the top of the viaduct and the pressure registered over 260 pounds. Under this severe condition the shut-off nozzle was used, which had no effect on the working of the engine.

A new auto combination wagon with Booster pump has recently been delivered by the Ahrens-Fox Company to the city of Georgetown, Ky.

Good Looking Waste Cans

which are serviceable and durable as well, will be a big help to you in keeping waste paper and trash off your streets.

BUTLER IMPROVED
STREET CANS

38 inches high, standing 4 inches off ground. Heavy and durable construction, yet may be shipped at low freight rates on account of "knock-down" construction. Standard style has one opening—but can be supplied with two openings if desired.

We are makers of the Minneapolis Official Street Can and other styles of trash cans for street use. Let us know your requirements, so we can send further information and submit prices, illustrations, etc.

BUTLER MANUFACTURING CO.

St. Anthony Falls Station, Minneapolis, Minn.
Station A., Kansas City, Mo.

Also makers of "Rus-Pruf" corrugated culverts with B. M. C. Wings.

CASE

ROAD-BUILDING MACHINERY

Contractors find that CASE Road-Building Machinery brings greater returns for every dollar invested than any other make. City and County Officials interested in the welfare of their communities, find that in CASE Machinery they have the wisest investment for their municipalities.

May we send you our catalog?

Rollers	Plows
Tractors	Rock Crushers
Graders	Stone Screens
Scrapers	Stone Bins
Drags	Dump Wagons
Scarifiers	Sprinklers
Rooters	Wheelbarrows, etc.

CASE

The Sign of Mechanical Excellence the World Over.

J. I. CASE T. M. COMPANY, Inc.
817-867 Liberty St., Racine, Wis., U. S. A.

Spraying Economy

FITZHENRY-GUPTILL CO.,
Power Sprayers and Equipment
49 N. Washington St., Boston — *135 First Street, E. Cambridge*

A Signal Horn for Fire Trucks

A SIREN HORN

The Inter-State Machine Company, of New London, Conn., has placed on the market a new hand-operated siren horn, which is illustrated herewith. It consists of an aluminum housing supported by a substantial bracket which fastens to the dash of the truck. The housing contains the gearing mechanism which gives the high speed to the fan necessary to produce the siren note.

The completely enclosed construction of this horn allows the gears to operate constantly in grease, thereby reducing wear to a minimum and making their operation almost noiseless. No foreign substance can reach them and there is no danger of the operator being injured from exposed gears.

Each horn is fitted with a simple friction clutch which permits it to be operated by oscillating the crank handle back and forth, instead of completely turning the handle, which may also be done.

The horn is attractively finished in brass or nickel. Its long distance siren note makes it a desirable signal for fire trucks, and it has already been adopted by many city fire departments as standard equipment.

Deliveries of Fire Apparatus

After making a thorough investigation of fire apparatus, the Borough Council of Tamaqua, Pa., awarded the contract for one triple combination chemical hose car and pumping engine to James Boyd & Brother, Inc., of Philadelphia. The committee was very favorably impressed with the new standardized models of the Boyd Company, and noted the extra heavy construction and fine finish of the machines.

Some of the recent deliveries made by this company are: to Wichita, Kan., one large six-cylinder hose car; to Wilmington, Del., one gas-electric aerial ladder truck; to Newark, N. J., one pumping engine and one gas-electric aerial ladder truck; one city service truck to Alhambra, Cal., and one to Highland Park, Mich., shown on page 459 of this issue; and a combination chemical and hose car to each of the following places; Council Bluffs, Ia.; West Chester, Pa.; Pottsville, Pa., and Austin, Tex.

✣ ✣

A Removal

The Portland, Ore., office of the United States Cast Iron Pipe & Foundry Company has been removed from the Yeon Building to room No. 834 Northwestern Bank Building. F. B. Dudley is sales agent.

✣ ✣

Water and Light Valuation

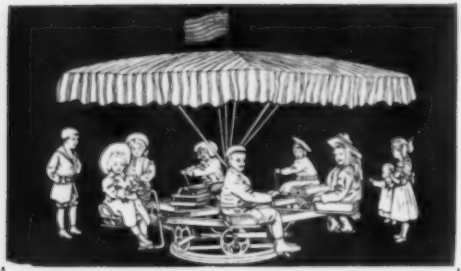
John H. Gregory, consulting engineer, of Hering & Gregory, New York City, has been retained by the city of Charleston, S. C., to make a valuation of the property of the Charleston Light & Water Company.

FOR CONTRACTORS AND BOARDS OF PUBLIC WORKS

Steel Forms for Concrete Work

Steel forms for general concrete work are the specialty of the W. B. Jones Boiler Company, of Streator, Ill., and are described in an attractive illustrated catalogue published by the company. The views show the forms in use in constructing sidewalks, curbs and gutters in various cities. These forms are made under Heltzel patents.

Some of the points of excellence and convenience claimed for these forms are: The side rails are made so that the top surface is without any obstruction against the free passage of the rodding-off tool, are adjustable so that the forms may be set in any odd space without using wood to fill in, and never change in design; 100 feet of sidewalk forms can be converted into 100 feet of curb and gutter forms by securing 16 curb and gutter templates; with 300 feet of forms one form-setter keeps 20 men and a big mixer going; the division plates can be removed by one man without using a hammer or disturbing the side rails; they are smooth and are connected by merely dropping in place, without using a wedge, a key, a bolt or any movable pivot arrangement which would rust and become fixed; these plates are made in all lengths up to and including 6 feet, so that a 12-foot walk can be made by doubling the 6-foot plates, a 10-foot walk by doubling the 5-foot plates, etc.; the side rails are made of a special shape, comprising three right-angle bends for rigidity and durability; the division plates can be removed before or after the finish is applied. Forms for street crossings, corners, stock tanks, etc., are shown in this catalogue, also long-handled concrete finishing tools, a pressed steel batch box, etc.



The Health Merry-Go-Round

furnishes Entertainment, Exercise and Health for the children.

Especially adapted to the needs of **Parks, Playgrounds, Schools** and **Kindergartens.**

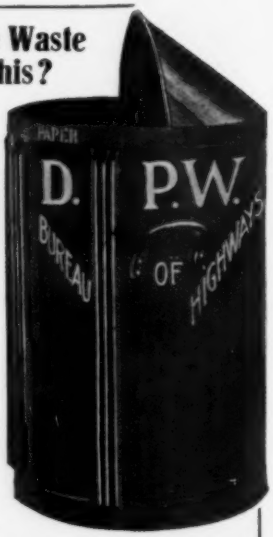
Guaranteed to be free from defects—**Durable, Safe, Simple.**

Write for Illustrated Catalogue

THE HEALTH MERRY-GO-ROUND CO.

Dept. H-14 **QUINCY, ILL.**

Could you use Waste Cans like this?



We have furnished about 2,000 of them to the City of Philadelphia, which are now on the street corners. These cans are made in accordance with the city specifications, and are specially constructed for hard usage, being made of extra heavy sheet iron and having metal braces 6 inches apart running the full length of the can.

This can is the best style for streets, parks, factories, stores or warehouses—in fact, any place where there is waste material of any kind.

These cans will give you good service. May we send one or more on approval?

DeZouche, Hanson & Co.

14 North Fifth Street **Philadelphia, Pa.**

PARKER'S JUMPING HORSE THE ONLY SUCCESSFUL PORTABLE JUMPING HORSE CARRY US ALL ON THE MARKET

CARRY US ALL AND THE GREATEST MONEY MAKER IN THE AMUSEMENT LINE.

One machine earned $15,850 in 28 weeks, 1904
One machine earned $17,943 in 29 weeks, 1905
One machine earned $16,692 in 28 weeks, 1906
One machine earned $16,017 in 27 weeks, 1907
One machine earned $12,662 in 27 weeks, 1908
One machine earned $18,842 in 28 weeks, 1909
One machine earned $18,521 in 28 weeks, 1910
One machine earned $20,138 in 52 weeks, 1911

"Above figures will be verified to customers."

C. W. PARKER, Leavenworth, Kas.

BONDS

27 years' experience in the manufacture of all kinds of bonds and certificates—

Including Municipal Government, Public Utilities, Industrial and Commercial—enables us to produce such documents technically, as well as mechanically perfect.

It will be worth your while to consult us on your next issue.

ALBERT B KING & CO INC
204 BROADWAY
NEW YORK CITY
ESTAB. 1886

Capital and Surplus $9,000,000

COLUMBIA KNICKERBOCKER TRUST COMPANY

Sixty Broadway New York

SAFETY IS THE FIRST REQUISITE IN THE ISSUE OF

Municipal Bonds

Conservative investors gladly pay more for bonds concerning the issue of which they feel secure. Why not issue your bonds in a manner to command the highest market prices?

For information address

Park Terrell, Manager,
Municipal Department

A Busy Truck

Those who are familiar with Boylston Street, Boston, in the neighborhood of the Massachusetts Institute of Technology, can not fail to have noticed the industrious little truck bearing the name of the Institute. It is really a remarkable little worker, which is now bearing a load of bamboos or a thousand of brick for testing in the laboratories, a load of furniture for some social occasion in Huntington Hall or the Library, or more often taking a huge load of ashes to be disposed of. This is an Autocar that was adapted in the shops of the Institute for its present uses.

The truck was fitted with a steel box with the tailboard hinged so that it could be turned up instead of down in the usual tailboard fashion, while by means of a winch in front the body could be tipped sufficiently to discharge the load without handling. A removable crane was constructed from 1½-inch pipe, bent like a boat-davit, which, swinging in a socket, finishes the adaptation of the truck for ash-collecting.

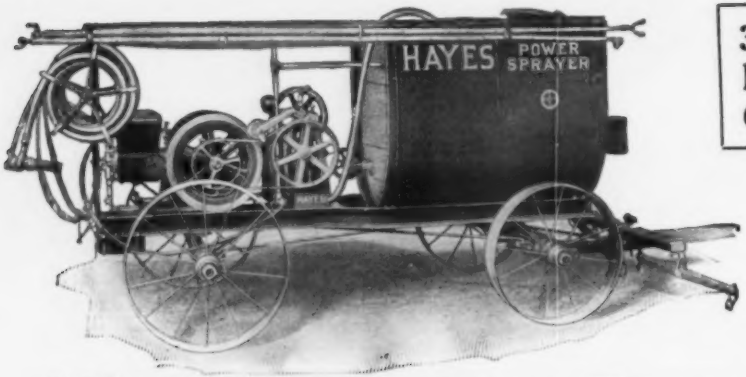
The device is exceedingly simple and has proven practical, for it is comparatively easy for one man to handle, lift and tilt the metal ash cans. In the rubbish at a technical school there is very good reason for wishing to avoid much personal handling, since there is much in the way of broken glass and chemicals that might be injurious.

The truck has an excellent record. In the first year it was in commission 298 days, in the second 295 days, and in the third 292 days. In this time it has traveled something above 21,000 miles.

AUTO TRUCK USED BY MASSACHUSETTS INSTITUTE OF TECHNOLOGY

The Diesel Engine

Among the claims of the Diesel engine to serious consideration are: an extraordinary efficiency; an ability to assume immediately any change of load within its capacity automatically and with practically no variation in speed; a fuel consumption from half to full load almost in proportion to the load carried, and a very small cost of attendance. In 26 states of the Union are Diesel engines amounting to 70,000 horsepower in successful operation under broad guarantees. The Busch-Sulzer Bros.-Diesel Engine Company, of St. Louis, has combined the long experience of Diesel building in America with the best that Europe affords in Diesel engineering, manufacturing and experience. The company's illustrated catalogue shows the application of the Diesel engine to various manufactures and utilities, and ilustrates and describes installations in many of the states. The many testimonials given are classified under the heads of economy, reliability, maintenance, regulation, operation, long non-stop operation, parallel operation and interchange of current, overload capacity, construction, repairs, attendance, municipal installation, Diesel versus steam and water power, customers' re-orders and satisfaction, affording an excellent résumé of the claims of the makers. The catalogue



300 lbs. Pressure Guaranteed

Hayes Triplex Power Sprayer

High Pressure Spraying

High Pressure spraying is plus spraying —*it is 100% efficient.*

300 lbs. pressure completely atomizes the solution into a penetrating fog-like mist that *seeks out* and *adheres* to every particle of foliage. The atomization is so perfect that drops will not form on the leaf and fall off, wasting the solution, and so little solution is required as to prevent any possibility of injury to the foliage. Besides, high pressure gives greater capacity for the same size nozzles, hence more rapid work and lessened cost of spraying.

For municipal, park and large estate work, high pressure spraying is the only efficient and economical method. To reach the tops of shade trees with a penetrating mist powerful force is required. For trees of ordinary height, regular spray nozzles are used. Where tall trees are to be sprayed "solid stream" nozzles are required which force the solution in a small solid stream to great heights where it breaks into a fine mist due to high pressure.

Hayes Power Sprayers are tested to 500 lbs. and are *guaranteed* to maintain 300 lbs. working pressure. The **Hayes** is of thorough, mechanical up-to-the-minute construction from tank to nozzle. Special design engine, large capacity high pressure pump, improved agitator, 200-gallon tank, hydraulic tankfiller, hose reels, bamboo rod holders, extra high pressure hose and **Hayes** spray nozzles, improved in every detail—the **Hayes** is sure, reliable and easy in operation and *guaranteed* in efficiency.

Hayes Hand & Power SPRAYERS

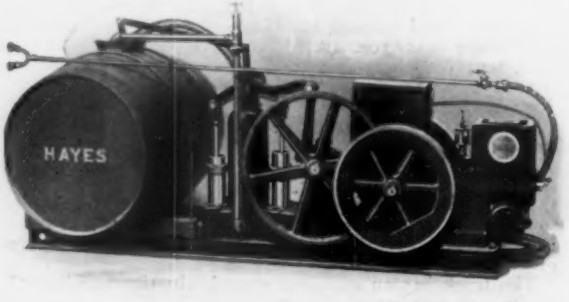
WRITE! Send postal for free book S-22 on High Pressure Spraying and complete catalog.

Hayes Pump & Planter Company
GALVA, ILLINOIS

25 Styles.

Hand or Power Sprayers for small or large Parks, Cemeteries or Estates.

Complete outfits or separate pumps as desired



has been prepared with great care and excellent taste in typography and the arrangement of material.

+ +

Valve, Service and Roadway Boxes

A pocket-size catalogue of valve, service and roadway boxes is sent out by the Central Foundry Company, of New York City. It includes illustrations and descriptions of stop-cock boxes for water or gas, extension sections for service boxes, round-head and square-head roadway boxes for gas or water mains, extension valve boxes with bases of various styles, frost-proof extension roadway and street valve boxes for gas and water mains, etc.

+ +

Trenching Machinery

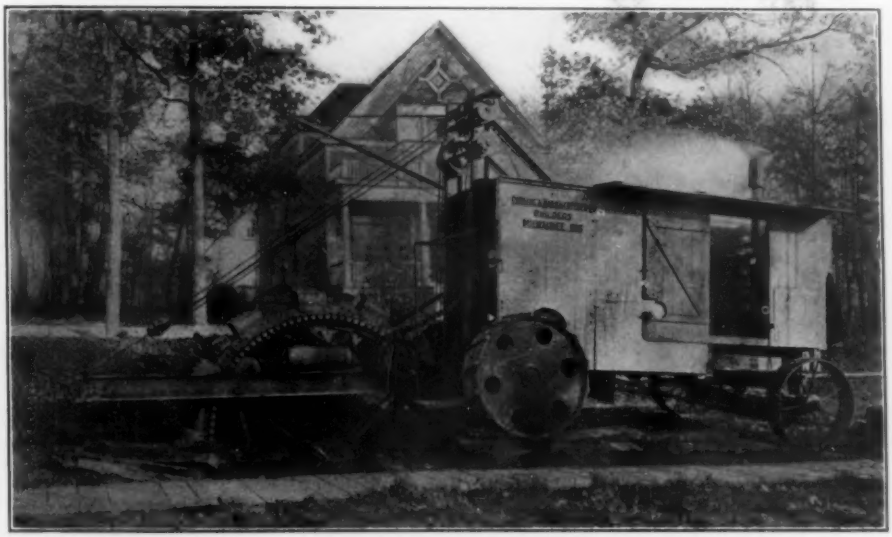
The Pawling and Harnischfeger Company, of Milwaukee, have placed on the market a line of excavating machinery guaranteed to excavate at least three lineal feet per minute in a trench three feet deep in ordinary earth that can be dug with a spade and is free from boulders, shale rock and other serious obstructions. The company also has records of much faster work than this. The excavator is constructed almost entirely of steel. The open-type wheel prevents clogging by caving of banks. The buckets have sharpened edges and tool steel teeth; the conveyor is of the endless belt type and can be passed through the wheel to deliver to the opposite side. The motor uses for fuel either kerosene, distillate, motor spirit or gasoline, thus giving a cheap fuel consumption. When desired, the machines are also equipped with a steam power plant. Only two men are required to handle a "P & H" machine. The operator stands at the side and has full view of all working parts of the machine, as well as the digging wheel. The trench is cut to full depth at one cut, and the bottom is left at exactly the grade desired. The machines are equipped with wheel tractions or caterpillars, as ordered, and are built in various sizes to meet the requirements of different classes of work in different localities.

+ +

Fine Views of Well-Laid Roads and Streets

An unusually fine large catalogue of views and fac-simile testimonials to the excellence of Montezuma asphalt has been prepared by the Warner-Quinlan Asphalt Company, of New York City. The many photographs show the paving in process of being laid and in completed condition, and also picture the storing and shipping of the asphalt.

Montezuma asphalt is obtained from a natural liquid asphalt found about thirty-five miles west of Tampico, Mexico, and is brought in tank steamers to the refinery of the company at Warners, N. J., and refined expressly for the asphaltic contents under methods claimed to insure absolute uniformity and consistency of the asphalt. It is prepared solely for paving purposes, and contains no vegetable or mineral matter, but is pure bitumen. It is used in many of the largest cities of the United States, and is said to possess great climatic resistance and permanency under extreme exposure, and to produce a great yardage. This asphalt, of various penetrations, is of high quality for treating roads, roofing, waterproofing, block filler, insulating compound, pipe dip, and for all purposes for which asphalt can be used.



EXCAVATOR FOR TRENCH WORK

Save the Trees

Protect the beauty of your parks and boulevards by preserving their chief charm—the trees. If they need no attention you want to know it—If they do, you ought to know it.

Write today for free expert examination by Davey Tree Surgeons. Representatives carrying credentials available on short notice. For your protection ask to see these credentials. Free booklets mailed on request.

The DAVEY TREE EXPERT CO.
Box 94, Kent, Ohio

Branches with telephone connections: New York, Philadelphia, Chicago, Montreal, San Francisco.

Get Acquainted with the Complete

RUNDLE-SPENCE Bubbling Fountain Line

Write for Catalog

Quality, Efficiency and Price are Right.

RUNDLE-SPENCE MFG. CO.
Milwaukee, Wis.

Puritan No. 1

"Acme of Sanitation and Quick Service"

Halsey W. Taylor Co.
WARREN, OHIO

Puritan DRINKING FOUNTAINS

Puritan No. 2